VOLUME VII NO. 9

WESTERN INDUSTRY

World's Largest Hydro-electric Generators—At Grand Coulee Dam

Twenty-Five Cents

September, 1942

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What's New with the Editor

The West On Its Way

So much interest was aroused by the survey in the August issue of *Western Industry* on the possibilities that the Utah iron and steel development has for the West, and so many calls for extra copies of the August number were received, that a series of survey articles dealing with the utilization of Western raw materials has been planned. They will appear in the course of the next few months, with an aluminum survey heading the list. This is scheduled for the October issue.

Undeveloped resources that we once hardly knew existed have suddenly become vital necessities in the national economy. Where the hydro-electric power projects of the Pacific Northwest at one time appeared to be incredibly extravagant schemes, today they are of tremendous value in serving industrial needs. Where once the West was considered basically deficient as a manufacturing area because it was lacking in the cornerstone of industrial metals—iron—today it is on the way to becoming self sufficient in respect to iron and steel, with two great mills under construction in Utah and Southern California and others likely to follow.

Henry Kaiser's dramatic entry into the cargo airplane situation is an indication of what may happen when Western material resources are combined with the higher productivity of Western workmen and the unhampered thinking of Western industrial leaders. So rapid is the tempo of thinking today that a magazine hardly has opportunity to predict or forecast, so great is the task of keeping up with things that have actually already happened.

Increased Service

To be of proper service to its readers, *Western Industry* must keep them informed on the details of Western developments as well as its outstanding features. Consequently the department carrying the heading "The West On Its Way" has been greatly enlarged to include a much wider and more complete summary of industrial projects, new businesses, plant enlargements, etc.

News items for two other departments, "Westerners At Work" and "Trade Winds" are welcomed. Personal news is not only of great interest, but also of great value, because it enables readers to maintain better contact with friends, acquaintances, customers and prospects. It enables them to do business more efficiently, and consequently is not based on an appeal to vanity, as so many people are inclined to think. Actually, it is a business courtesy to keep others informed of such changes.

New Dress

Along with keeping readers informed of what is going on, there is also the necessity of presenting the information in a pleasing typographical and pictorial form. Consequently a new cover design and new format for the interior of the magazine are in course of preparation, to be used for the first time in the October issue. We believe our readers will be well pleased with the prospective changes.

WESTERN INDUSTRY

The Journal of Western Development

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COVER PICTURE

• *Since the Grand Coulee is the largest dam in the world, it requires the largest generators in the world to develop the hydro-electric energy from it. Our cover picture gives a glimpse of the interior of Grand Coulee power house, which is helping to build up new industries for the Pacific Northwest once considered as only fanciful dreams.*

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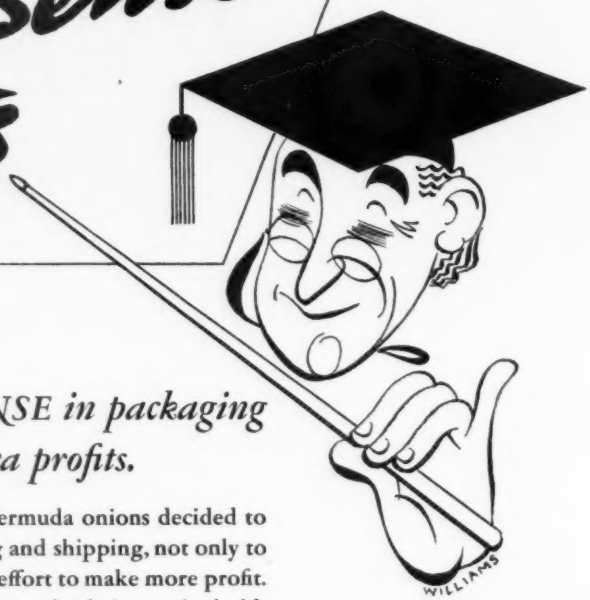

COMMON SENSE *in packaging means dollars and cents in extra profits.*

Recently a large Coachella Valley shipper of Bermuda onions decided to do something about streamlining his packaging and shipping, not only to facilitate the handling of his crop, but also in an effort to make more profit. Cabco engineers produced an Allbound box of even bushel capacity holding exactly fifty pounds of onions.

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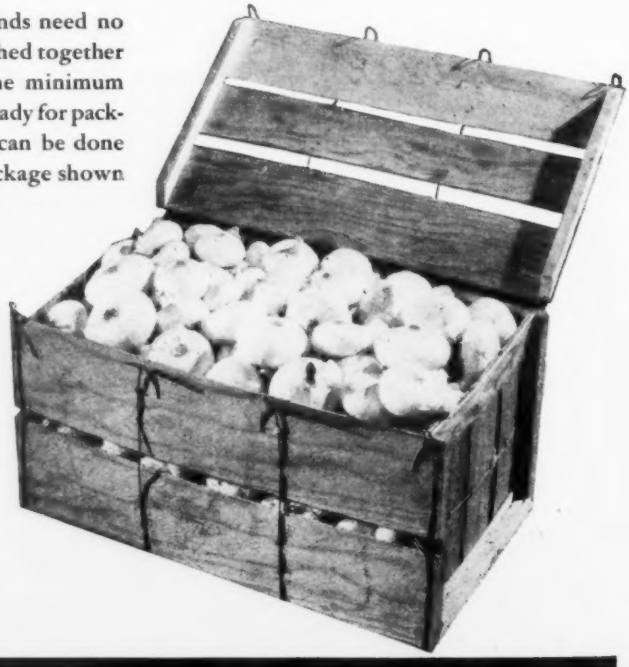

No matter what your problem, whether it's shipping Bermudas or bicycles—bombs or broccoli—there's a Cabco Allbound box or crate to do the job. Get the facts now. Lay your plans for greater savings in the future. Write Cabco engineers today. There's no obligation, of course.

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100 BUSH STREET
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SALT LAKE CITY

LOS ANGELES

Spotlight on the News

Western Industry
FOR SEPTEMBER, 1942

★

Vol. VIII No. 9

Kaiser and Regular Aircrafters Confer At Santa Monica on Cargo Plane Deal

IF BIGGER cargo planes can be built, Donald M. Nelson wants them built, whether they are to be those that Henry Kaiser said he could produce in his own Pacific Coast shipyards, or others turned out from existing aircraft plants. He has called on the industry to give him the facts.

It may have seemed like a brush-off when Nelson told Kaiser he could build all the planes he wanted, provided he didn't take any materials away from anyone else. But that wasn't the whole story, as it developed later when a special committee from the aircraft industry met with Kaiser in Donald Douglas' office in Santa Monica, acting under a directive from Nelson asking that the committee study and evaluate the Kaiser proposal from a practical manufacturing standpoint.

"The directive also instructed the committee," said a statement issued after the conference, "to determine the type of airplanes that can be produced, which will be most effective for the prosecution of the war and also to determine the practicability of constructing these cargo-carrying airplanes in shipyards under Mr. Kaiser's control.

"Because many of the problems involved include information of value to the enemy, the committee unanimously adopted a resolution agreeing not to make public any of the facts and data developed in the discussions and to submit its report directly to the government as soon as it is completed.

"Individually and collectively, the committee pledged to the government its fullest cooperation in developing a program for increasing cargo-carrying airplane production without interference with the present or prospective military programs assigned to the aircraft industry by the government.

"The committee also assured Mr. Kaiser it will do everything in its power to help him carry on any program the government deems necessary or feasible."

Kaiser meanwhile has made a hook-up with Howard J. Hughes, multimillionaire airplane designer, tool maker and speed flyer in a 50-50 partnership. Hughes' publicity man, Russell Birdwell, announced that they are working on plans for a plane larger than the B-19, world's largest bomber, being built by Douglas, which weighs 80 tons loaded and has a wing spread of 212 feet.

"The Pacific Coast is like a group of players in a great national football game," says Kaiser. "We've got to play smart football. We've got to take to the air. And we have got to take hazards—something the Pacific Coast has never refused to do in the past."

Forging Plant Completed

Completion of a $1,000,000 plant in Los Angeles for the Earle M. Jorgensen Co. brings the number of forge works in California up to three. The Jorgensen plant began operations late in August.

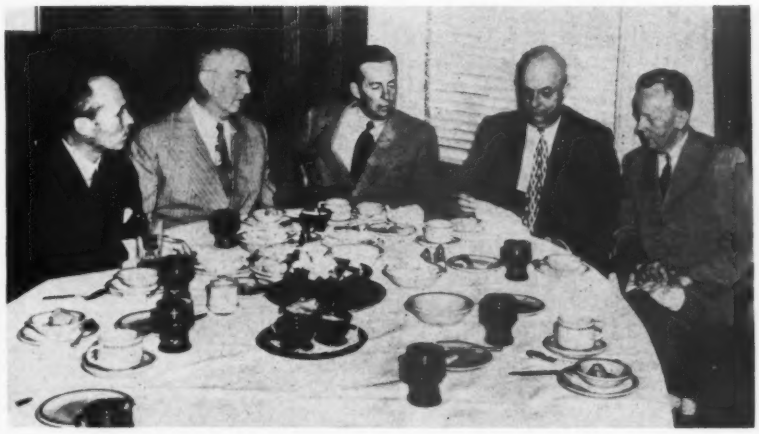
It contains a bank of the most modern type heating furnaces to serve a 1,000-ton steam hydraulic press, two normalizing furnaces 65 feet and 25 feet in length to develop the proper grain structure for the steel after its forging, and a 1,000-ton hydraulic straightening press. There is also a manipulator to handle ingots for the heating furnace.

Earle M. Jorgensen Co. are distributors of steel products, and establishment of a forge division for large heavy type forgings puts them into the manufacturing group also.

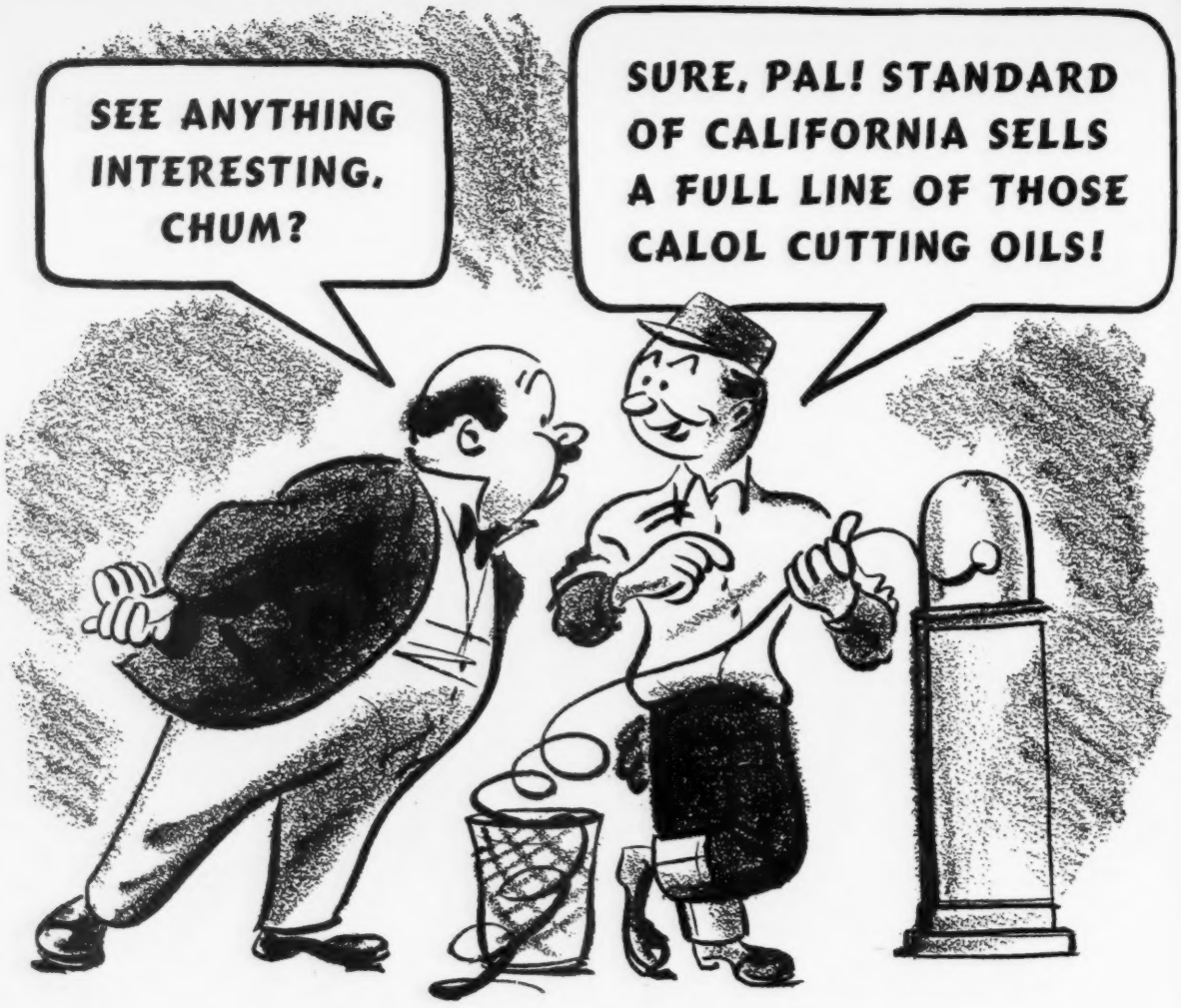
An Industrial State

For every worker in agriculture in California there are more than seven in non-agricultural employment, proving that California is now predominantly an industrial state, said H. C. Carrasco, State Labor Commissioner, speaking before the Institute on Labor in the War at Los Angeles August 16.

In June 1942 there were 2,259,000 non-agricultural workers engaged in manufacturing, mining, construction, transportation, public utilities, trade, government, finance and service, while those employed in agriculture in May, the last month for which figures are available, were estimated at 336,000. Peak agricultural employment



• Let's have the real facts, says Donald Nelson. So he asks the aircraft industry to get together with Henry J. Kaiser. What happened hasn't been told. Left to right: Grover Loening (WPB aviation consultant), Glenn L. Martin, Donald Douglas, Henry J. Kaiser, and John K. Northrop.



It's still news (and mighty good news) to many people that there is now a Calol Cutting Oil for every purpose. Yes, no matter what your machines handle — tough steels, alloy steels, mild steels, or non-ferrous metals — you'll find a type of Calol Cutting Oil especially designed to do the job *right.* Standard Oil Company of California offers these cutting oils under the Calol name only after exhaustive tests have convinced us they fully measure up to everything "Calol" stands for. Call your supplier about Calol Cutting Oils now — and watch them speed production on *your* machines.

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Spotlight on the News

will only slightly change the above ratio, according to Mr. Carrasco.

Three-fourths of the workers in manufacturing are now producing durable goods, and only one-fourth non-durable goods, he reported. In 1935 the ratio was 39 per cent for durable goods and 61 per cent non-durable. Lumber, timber, furniture, clay, glass, iron and steel products, transportation equipment, machinery, automobiles, etc., are classed as durable, and food, tobacco, textiles, wearing apparel, paper, chemicals, petroleum, leather, rubber, etc., as non-durable.

Making Plastic Plane

Production on a plastic-bonded plywood plane believed to be the nearest approach yet toward the complete elimination of strategic metals from military planes has been started by Ryan Aeronautical Company at San Diego. This two-place open cockpit plane, designated by the Army as PT-25, is made entirely from standard plywood, geld with cold-setting formaldehyde glue. The only molded section is the leading edge of the wing.

It has completely done away with aluminum alloys with the exception of the engine cowling, which represents only 2 per cent of the weight of the plane. Forgings and castings are also eliminated, as are much of the steel and iron parts used for fittings and structural parts.

Developing Tungsten

Three proposals regarding tungsten have been sent to the WPB, OPA and Metals Reserve Company by the Mining Association of the Southwest following a conference in Los Angeles August 5.

These are that the price of tungsten be lifted from $24 to $35 at the earliest possible time; that the government establish a tungsten custom mill at some convenient point along the recently discovered tungsten deposits in Madera, Fresno, and Tulare counties, California, and that a similar federally financed custom mill be established somewhere in the vicinity of Tucson, Ariz., to treat Arizona and Northern Mexico tungsten.

It was suggested also that Metals Reserve Company consider providing suitable facilities for sampling and buying tungsten concentrates and stockpiling ores from Northern Mexico, at some point between Tucson and Nogales, to stimulate mining of scheelite in Sonora and Durango. This would obviate the necessity for shipping tungsten concentrates clear back to Staten Island for determination of their suitability for purchase by the government.

The association is further urging that Metals Reserve Company establish a reduction plant at or near Parker, Ariz., for processing Western and Northern Arizona manganese, and that a gold mill at Quartzsite, Ariz., be revamped with private capital to handle manganese for government purchase.

Gas Storage Plan

A 240-acre underground reservoir for natural gas, to be filled from the surplus production of the San Joaquin, Ventura and Los Angeles Basin fields, is the California Railroad Commission's proposal for averting a threatened gas shortage in Southern California this winter caused by the demands from new war industries and resultant increases in population.

The commission has asked the federal government to take over the depleted Playa Del Rey oil field near Venice for the purpose. Two billion feet of surplus gas would be forced underground by high compression during the remaining warm months, which would permit the withdrawal of from 20 to 25 million cubic feet daily during cold spells, which would be more than enough to meet the probable peak shortage of 16 million feet. Cost of the project is estimated at $1,000,000.

Specialize on Parts

Almost 50 firms in the Los Angeles woodworking industry now engage in or are prepared for production of wooden planes, gliders, and wood parts for metal planes. Another fifty, dealing in plywood finishes, glues and special equipment for aircraft woodwork produce or are represented in the area.

Certain firms listed as plywood parts producers specialize in control parts such as rudders, ailerons, stabilizers and tabs. These are, in the main, made from flat plywood; certain shapes are preferred moulded.

Wooden propeller production is an old, established branch of the industry in Los Angeles. Trainer propellers of laminated resin-glued lumber, use metal leading edges and tips or are all wood. Present trend is toward high density plywood.

New Rubber Process

United Rubber Co., employing a new method of processing rubber from used tires said to recover 25 per cent more rubber than heretofore obtained, began operations at 823 Traction Ave., Los Angeles, last month. Grover C. Berryman invented the process, and Gerald Fitzgerald and Sam and Nathan Kaplan are associated with him. Production began with four tons daily, which they hoped to increase to 10 tons within a short time. The company will supply rubber compounders with slab rubber for use in strategic war materials.

• Liberty ships are launched in a blaze of glory, but here's proof they do their job afterward. A Liberty ship built on the Pacific Coast docked at San Pedro after voyage to a foreign port.

Official U. S. Navy photographs accompanying this article

• Thirty first-aid stations are fully equipped to handle any air-raid emergency. E. L. Davies (right) and a member of Auxiliary Police examine a typical station.

Be Ready! Regrets Put Out No Fires At All!

By ROBERT S. LAMBORN
Coordinator of Air Raid Defense, Moore Dry Dock Co., Oakland, Calif.

ANYONE who has studied closely the effectiveness of aerial attack against European cities in the present war must be struck by the fact that the curve of this effectiveness rises sharply at first, then levels off; and finally, begins to drop off sharply.

What causes this drop is the fact that measures of Passive Defense, when finally perfected, do counteract very materially the destruction of life and property resulting from aerial bombardment.

It is our extreme good fortune in the United States that time has worked in our favor in this connection. By taking advantage of the tragic experience of the British in withstanding aerial assault, we should be able to level off the curve of attack effectiveness at the very start instead of suffering severely, as the British did, before we work out Passive Defense arrangements and put them into effect.

We on the West Coast are inclined to lean toward the belief that "it won't happen here." Our complacency in the face of the facts is hard to understand.

Up to a few days ago, civilians perhaps were justified in believing that of necessity an aerial attack on the West Coast must be carrier-based. The fact that the Japanese have landed a considerable force of men on three of the Aleutian Islands group and are consolidating their holdings in that area, seems to me to change this picture very materially.

To our plants on the West Coast, particularly in the Northwest, the bell of warning should be tolling loud and long. In my opinion all plants on this coast should heed the warning and prepare for an all-out attack, and for anything less than that, be thankful.

Civilian Defense is the measure set up for the defense of civilians and property before, during and after an air raid. Our Navy and our Army are our first line of defense. The second line of defense is Civilian Defense. This line goes into action when the first line of defense has been penetrated or is about to be penetrated.

Those of us charged with the protection of industrial facilities have a two-fold responsibility. First, the protection of the workers in the plants; second, the responsibility to the war effort in seeing to it that such industry, or part of industry, functions regardless of enemy air action. When we realize that each soldier in the field must have three workers producing at top speed behind him, we understand how important our job is.

Civilian Defense is a cooperative organization, operated entirely on a cooperative basis. The need for cooperation between individuals and the Civilian Defense Corps is great. The entire Civilian Defense Organization, because it is not enforceable by law, due to the independent sovereignty of states and towns, must rely upon the whole-hearted cooperation of the American people in order to function. Federal agencies, such as the Office of Civilian Defense, cannot tell the states, cities and towns what they shall do; it can

only suggest and ask for their cooperation. Axis bombs, however, recognize no such local political boundaries.

Even though any aerial attack on the West Coast is carrier-based, it is enlightening to try and decide how effective such an attack might be.

Let us assume that a Japanese force does make the attempt to reach this area. I believe there are sufficient prime military objectives around San Francisco Bay to warrant such a gamble—suicidal though it may be! A medium-sized carrier will bring a minimum of 45 planes.

Approaching the coast under darkness, perhaps well hidden in the fog, the carrier arrives at the points where the planes take off. We also shall assume that all planes leave the carrier in safety—in five attack formations of nine planes each.

GOOD EXAMPLE

The Moore Dry Dock Company air-raid protection system described in this article is considered by the Office of Civilian Defense to be a fine example of careful and intelligent preparation for eventualities.

Our aircraft warning net gives us due warning of the approach of the enemy force, and our interceptors are ready for them. We maintain "control of the air" to such an extent that we succeed in stopping, or turning aside, eight out of every nine planes. So, only five enemy planes reach their objective.

Figures released by the British Ministry of Information indicate that only five per cent of their planes fail to get through on mass bombings on the Continent. In our hypothetical case, we are assuming that eighty-nine per cent fail to get through. I think you will agree that that is excellent "control of the air."

Each plane will carry one to two thousand 2.2 pound incendiaries. The plane will travel at a height of 5,000 feet or over (for incendiaries reach their maximum falling speed of 350 feet per second from this height). Such planes will travel at 200 miles per hour. Let us assume the planes are flying due east.

At point one, the east portal of the Twin Peaks tunnel in San Francisco, the bombadier begins to release his bombs. The rate of discharge is 20 bombs per second. It will take him 50 seconds to drop 1,000 bombs. During this interval of time the plane will have traveled three and one-third miles, the distance from the east portal of the Twin Peaks tunnel to the Ferry Building at the waterfront end of Market Street.

In cities such as San Francisco the ratio of open space (lawns, vacant lots, parks, golf courses, streets, and back yards) to

• In upper picture R. S. Lamborn (left), Air Raid Defense Coordinator, with one of the squad leaders of the Auxiliary Police, check one of the many fire stations carefully located throughout the yards. Below are Harry Hawke (left), Hull Superintendent, and V. Ross in front of a sandbag barricade where workers on wharves and piers may find shelter.

• James R. Moore (left), vice-president of Moore Dry Dock Company, and H. M. Gleason, manager of Naval Construction, standing at entrance to Air Raid Shelter No. 5.

built-up area is about five to one. Out of every twelve bombs dropped, ten will fall in open area and no particular damage will result. Of the remaining two, one will fail to function and one will start a fire. Out of every one thousand incendiaries, a minimum of 83 fires will be started.

Assuming that five planes get through, each carrying the minimum of 1,000 bombs, a little simple arithmetic tells us that we will have 415 fires started simultaneously in an area less than one mile wide and extending from the Twin Peaks tunnel, the length of Market Street to the Ferry Building. So we must realize the tremendous task which faces all of us when we come in contact with the "real thing."

The need of fire fighting equipment, ample water supply, and, above all, auxiliaries trained in the proper use of that equipment, to assist the regular fire department when the call comes, is great.

Here in the plants of the Moore Dry Dock Company of Oakland we have recognized the problem and are doing something about it.

We have at this time some 900 men who have been trained in our Civilian Defense Organization as auxiliaries in the Police, Fire, Medical and Damage Clearance and Utility Control services. These auxiliary services are manned with an average of 125 men per yard, per shift.

Fire watcher stations have been established in certain locations within the yards and these stations are tied in directly with the control center at all times.

In addition we have established 48 posts throughout the yards. These posts have been established with three things in mind: (1) already existing telephone communications; (2) those points where there are vital installations, and (3) those centers where large groups of workers will be located during an air raid alarm.

Thirty first aid stations also have been installed. These stations are fully equipped to handle any emergency which may arise as the result of an air raid attack.

Numerous well-placed fire equipment stations are located throughout the yards. These installations consist of secondary water supply, stirrup pumps, sand, shovels, buckets, and hose reels, and appropriately marked "For incendiary bomb use only."

Pumping System

We have just purchased two auxiliary pumpers, trailer mounted, rated 600 gallons per minute at 120 pounds pressure. We believe that with this equipment plus our regular fire equipment we will be able to cope with any fire emergency. We also have a number of stationary auxiliary pumps so located as to obtain water from San Francisco Bay. This always will be protection against a lucky hit destroying the main water lines coming into the plants.

In order to protect our administration personnel we have constructed numerous sand bag air raid shelters. These shelters depend upon the protection afforded by a sand and asphalt mix which we have found to be extremely effective. No attempt is made to make these shelters safe against a direct hit; however, we believe them to be blast and splinter proof.

We also are making arrangements at this time to treat the windows of the office buildings, hospital, and other locations where needed, with a preparation that is found to be very effective in making glass shatter proof. If under actual air raid conditions this material should hold up as satisfactorily as it did during tests made, it could be used effectively throughout our communities.

Educating the Workers

To protect the workers in the yards we have erected sandbag barricades along the hulls on many of the building slips. Workers on the wharves and piers will seek shelter behind these barricades during air raid attacks. Workers on the hulls during such attack are instructed to seek shelter within the hulls under construction below the upper deck. This is also true of all men working on boats already in the water. Other personnel in the yards will be dispersed throughout the yards in order to prevent large numbers of workers gathering in any one spot, other than in the shelters already mentioned.

We have found it necessary to work with the men in the yards, schooling them in the work that our auxiliary service men were doing. In order to reach each individual we made up a series of talks and recorded them. These recordings were worked in with a musical program and used during each lunch period, all shifts, over a three-week period.

The talks were well received, and we found that it stimulated the interest of the men, not only in the work we were doing, but to such an extent that many of the men wanted to join the Civilian Defense Corps. Some of the subjects covered were: "war gases"; "protection against war gases"; "aerial attacks upon cities"; "auxiliary firemen"; "sabotage"; "blackout operations," and "morale."

At this time we are preparing a pamphlet on air raid instructions to be distributed to all men in the yards. The pamphlet will outline all of the rules and regulations which become effective when the air raid alarm is sounded.

All men of the auxiliary services have been equipped with proper identifying arm-bands, identification card, and hard-hats which are appropriately painted and marked with the insignia of the auxiliary service in which the man is enlisted.

Our Civilian Defense Plan for the Moore Dry Dock Company follows closely the plan outlined by the Office of Civilian Defense for the "Protection of Industrial Plants and Buildings."

We receive our official air raid warnings from the District Warning Center, which is the office of the District Attorney of Alameda County.

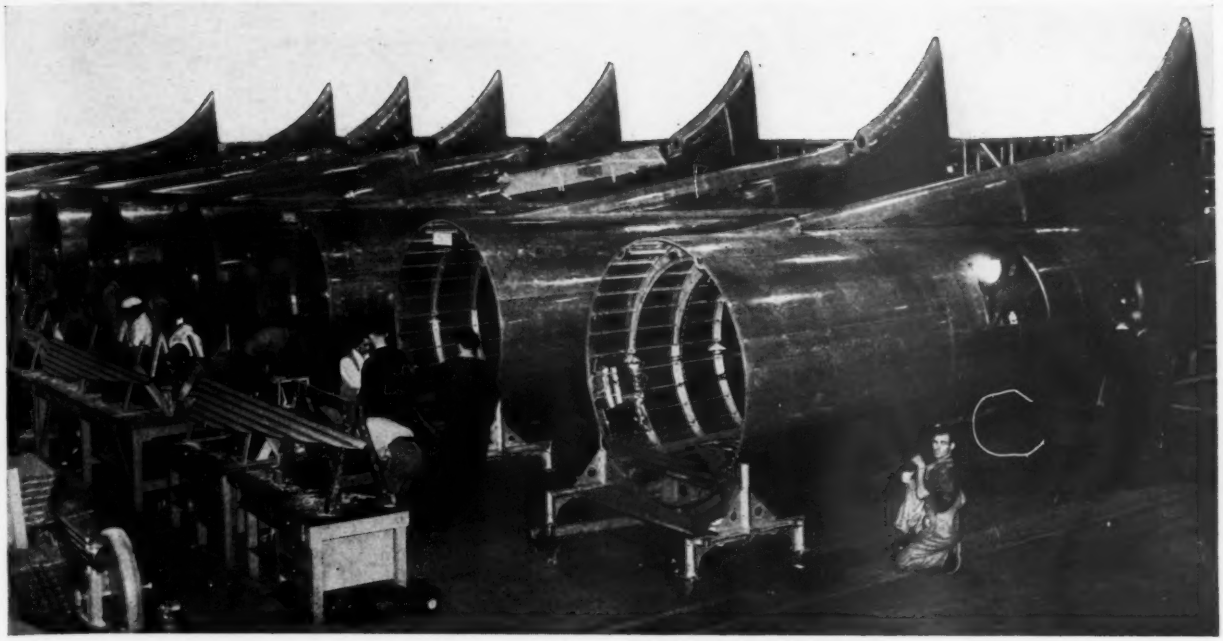
Following the Signals

When the "yellow alert" is flashed to us, we consider it a confidential warning and notify only those persons within the yards as have to do with the actual "blacking out" of the plants. In this manner we do not disrupt production, for work must continue up to the last moment.

On the "blue alert," key persons are contacted at their posts and last-minute arrangements are made to "blackout." Upon receipt of the "red" signal the air raid alarm is sounded for a period of one full minute. Three minutes from the start of the sounding of the air raid signal, the plant is "blacked out."

In conclusion, I should like to state that it is my belief that incendiary bombs have a hazard for us which is likely to be one of the most serious of all difficulties of Passive Defense. When we realize that in the great fire of London in December of 1940 over 1700 fires were started almost simultaneously; that better than seventy per cent of all material damage to date in England has been caused by fire, not by demolition bombs; we realize the problem that confronts us if any attack is made in this area.

There is only one answer to the problem and that is—preparation. After the first bomb falls, it is too late.



• Each part of the plane is virtually completed before the final assembly is begun, instead of assembling the whole thing first and completing the interior installations afterward.

Boeing Credits It To "Production Density"

Seven Distinct Assembly Operations For Flying Fortresses Instead of Single Line Eliminates Bottlenecks

PRODUCTION density—concentrating production in the smallest possible amount of floor space, is credited by Boeing Aircraft Company of Seattle as a major factor in winning the first joint Army-Navy production "E" award in the aircraft industry.

It is unofficially understood that Boeing produces more pounds of aircraft per square foot of floor space than any other manufacturer, but war-time restrictions on production figures prevent substantiation of the fact.

Instead of assembling airplanes into final form at the earliest possible time and making the many interior installations afterwards, as is done in most plants, Boeing breaks the manufacturing of Flying Fortresses into seven distinct major assembly operations. Since a B-17 occupies about one-third the space of a football field, the saving in eliminating a long assembly line for practically the entire plane is obvious.

In place of this long line, there are several for the major assemblies, with each part of the plane virtually completed before the final assembly is begun. The major assemblies are as follows:

Body minors, or the assemblying of the skeleton of the forward part of the fuselage; fuselage nose section, fuselage tail section; the tail turret, that portion of the fuselage aft of the dorsal fin; fuselage final assembly, where three parts of the fuselage are put together into a complete aircraft body; wing structures, where the wings are built in sections; and wing installations, where the engines, gas tanks and other items are installed on the wings.

Fuselage final assembly, wing installation and tail surfaces, the latter being subcontracted, feed into the final assembly fixture, which is not a final assembly line but a station where complete major sections are joined and wires and tubes connected. Two positions for final inspection follow.

To keep this procedure from becoming bottle-necked, Boeing carries on simultaneously an extensive sub-assembly which feeds into the major assembly. The whole system is fluid, enabling rapid adoption of design changes as fast as the experience of actual combat proves them to be necessary to keep ahead of the enemy. The prime example of accomplishing this without affecting the speed of production schedules was the change-over from the B-17E to the B-17F. Although the new ship involved more than 400 design changes, the first of the new ships was flown the day the final "E" was delivered to the army.

Production density requires that floor space be used to the best possible advantage. Wing jigs, for example, customarily have been set up parallel with the floor, but Boeing built theirs skyscraper fashion, putting up a battery vertical to the floor. One battery, capable of producing several wings, occupies a space equivalent to two horizontal wing jigs.

Travel of raw materials to the finished aircraft, from the single channel where they enter the plant through the fabrication section into sub and final assemblies, is claimed to be considerably shorter than in any other comparable plant.

Multiple action presses have cut the production time for one part of the exhaust outlet cowling from 30 minutes under the old drop hammer method to 15 seconds. Another tool, called by engineers a circumferential hydropunch, but nicknamed the "octopus" because of the long hoses leading to the punches from hydraulic pumps, makes the numerous slots in the circular "circumferential stiffeners" for the fuselage 45 times as fast as the machine it replaced.

The wiring bottleneck caused by the necessity of pulling individual wires through a conduit has been eliminated by substituting a new fool-proof method for the conduit. Wiring assemblies are made on large plywood boards, with pegs screwed into boards marking the bends in the wires. A red wire follows one course painted on the board, red and black wire a second course. Entire wiring assemblies can be put together in sub-assembly operations by girls of little experience and need only be attached to the proper portions of the ship when they leave this department.

Tough Job To Dimout Without Slowdown

Deflecting Shipyard Floodlights, Shielding Welding Arcs and Hiding Lumber Refuse Fires All Present Individual Problems

INDUSTRIAL establishments all along the Pacific Coast have been giving sincere and active cooperation to General DeWitt and the Office of Civilian Defense in the dimout program, but the problem of eliminating skyward glare is not as simple with them as pulling down the shades in your living room or painting the seaward side of a street lamp.

Besides the cost and complexities of getting a shield-off from the sky, is the vitally important fact that industrial plants are largely devoted to war production, which is an active war measure. If production is slowed down by the dimout, the danger to the war effort may be as great as a submarine or air attack. Furthermore, shipyards, aircraft plants, lumber mills, oil fields, and miscellaneous factories all have different problems, taking time to work out.

In the case of shipyards, the job is basically one of installing reflectors that will turn the light downward, eliminating the 30 to 40 per cent glare that had been wasted skyward. This will be a continuing job, requiring expert study and time, according to C. T. Bakeman, engineer in charge of the dimout regulations in the Washington-Oregon sector.

Deflecting Floodlights

At the Richmond, California, shipyards, an analysis showed that most of the upward glare came from the floodlights, of which there are several thousand. Use of an adequate shielding device has resulted in a considerable gain in efficiency, because all of the light then is reflected downward. Designing, manufacturing and installing reflectors is a slow process, however, and only a few hundred lights could be shielded each day. Ground reflection cannot be controlled in most instances, but as it is only about 5 per cent, the intensity is not great enough to make much difference.

Most aircraft plants also have large outdoor areas that must be kept lighted well enough for work to be carried on in all sections, and the dimout is being handled much the same way as in the shipyards. Seaward reflection also has to be avoided by directing the lights away from the sea or else relocating them. The Boeing establishment in Seattle is not bothered with this problem, as all its operations are indoors and the plant itself is blacked out.

Illumination for plant protection, which floods areas adjacent to defense plants with light and illuminates fences for protection against saboteurs entering or tampering with approaches to the plant, requires directing the light more toward the ground if possible and away from the sea, if the plant is near the ocean. Spillshields or visors have to be riveted to the side of the lamp. Few plants light up their outlying areas and fences above the danger point of intensity.

Arc Welding Glare

Arc welding is a difficult problem, because of the intense light concentrated in a small space. Where horizontal seams are being welded, installation of a canopy has been the answer, while on vertical seams a curtain has been set up like that used by telephone linemen working on a cable. It is made of light framework and canvas. This takes care of horizontal dispersion of light, and where the welding is under the bulge of the ship there is no vertical glare. Midships and above the bulge is a different story, however, and vertical protection also has to be supplied.

Regulations do not require the shielding of individual lights under an industrial skylight as long as the light source is not visible.

With sawtooth roofs, special shielding devices have to be made, because it is not feasible to paint the vertical glass louvers on account of the need for incoming light. The under side of horizontal vanes are being painted a glossy white, so as to reflect the upward lighting downward. Monitor type roofs, mostly confined to small plants, will require special shields to prevent upward glare.

The oil industry has agreed to shut off wherever possible the constantly burning waste disposal outlets for gases which are too flammable to be handled industrially and of not enough value to be captured. In other cases special canopy and side shields will be installed.

. T. H. Robinson of the Pacific Gas & Electric Co., T. H. Shepherd of the Los Angeles Bureau of Light and Power, and George Rankin of the Southern California Edison Company are acting as light control consultants to the Office of Civilian Defense. Mr. Bakeman, with the Puget Sound Power & Light Co. at Seattle, is an administrative assistant to the OCD.

All lumber mills visible from the sea positively must shield entirely direct light, the government requires, while all mills in the dimout area must shield upward glow as far as possible. Check-ups with each mill will be made to determine whether compliance with the rules is adequate.

Sufficient control of sawmill burner fires of West Coast mills to comply with the dimout order as outlined in proclamation 10 has presented a difficult problem to operators. More-than-capacity orders for products of the mills for war time needs result in just that much more waste fire in the burners at mill sites.

All West Coast mills have been asked to report the most effective manner in which the upward glare from mill burner fires may be effectively reduced, to the West Coast Lumbermen's Association headquarters.

An association technician, now studying the dimout problem, points out that general blackout orders issued last December were met and complied with satisfactorily but that he has not yet found a means of properly effecting a dimout. If it was not necessary for mill refuse piles to blaze continuously, the blackout principle could be applied.

Using Water or Steam

This latter method involves the spraying of water or the injection of steam on the refuse fire which kills any glow in a matter of minutes but which allows the fire to "hold" until an "all-clear" is given. However, it was asserted, the fact that no solution to the problem of a proper means of dimming out the burners has yet been found does not mean it will not be.

One such possible solution could be the shipment of mill waste away from the mills for disposition as fuel, or to waste-wood by-products plants, in order to avoid the necessity of burning it at the mill site. This latter solution might be employed if it did not involve costly long-distance hauls to retail fuel yards where ceiling prices for fuel wood are in effect.

Record Crab Pack

Making up for the disappearance of Japanese crabs, a record pack of 31,400 cases is reported for the season by the Columbia River Packers Association.

SCRAP SALVAGE

More than 100,000 tons of steel and iron scrap to help keep steel mills operating at full capacity was collected in six Western states in the month ending August 25, reports A. H. Richards, Regional Chief of the Industrial Salvage Section of WPB. Here are the figures:

California	67,874 tons
Washington	16,425 "
Oregon	13,704 "
Idaho	43 "
Nevada	3,627 "
Arizona	971 "
	102,644 tons

Sponge Iron — Saint or Sinner in Steel Shortage?

BECAUSE numerous iron deposits exist in various Western localities, great interest attaches to the experiments to be made by the U. S. Bureau of Mines with processes of making sponge iron to be used as a substitute for scrap in steel manufacture. Steel is normally made from approximately 75 per cent scrap and 25 per cent pig, but the growing scarcity of scrap has brought the proportion down to about 50-50, or below, and in view of the pressing need for a substitute, Congress has appropriated $600,000 for the investigation.

Several processes will be tried and compared, and if the Bureau's efforts bear fruit, there may be many sponge iron plants. Senator O'Mahony of Wyoming, who has been a vigorous champion of sponge iron, has predicted the possibility of one at the mouth of every iron pit. Whether it will be possible to get satisfactory results from so small an appropriation, however, is questioned by many authorities.

Meanwhile advocates and opponents of sponge iron are engaged in heated debate. The big steel companies are accused of suppressing sponge in order to protect themselves against competition. From the other side, it is pointed out that many manufacturers, from the U. S. Steel Corporation down, have invested heavily in sponge iron projects in the past, and have given up sponge as either impractical or uneconomical to produce. Sweden is the only country where it is still made, they say, and there, only because of peculiarly favorable local conditions.

The National Research Council of the National Academy of Science, asked by the War Production Board for a report, advises against a large research and development program for sponge iron at this time.

On the other hand, two reports by the Bureau of Mines in the past have suggested the desirability of sufficient research work on sponge iron to develop it as an alternate source of supply for steel manufacture. Now the very situation has developed where a substitute for scrap would be a life-saver, but the country is even less prepared for the emergency than in the case of rubber. In that instance foresight was not entirely lacking, although it apparently never will be settled who should have gotten off the dime first—Jesse Jones, the rubber manufacturers, the oil companies or the government.

Some of the opponents of sponge iron insist that it never has been made successfully. An impartial study of the steel industry's history, however, indicates that it is not a question whether it actually can be made, but whether it is justified by quality and convenience.

As to the first point, American Rolling Mill Company at one time bought 40 tons of Swedish sponge a day, because it had desirable elements of purity. Later other methods of manufacturing ingot iron were developed by Armco and the Swedish sponge was no longer used.

Experiments on the gas reduction of Mococo pyrite cinders conducted by the Mountain Copper Co. and the Bureau of Mines some years ago at Martinez, Calif., is cited as another proof, because good steel was produced from a satisfactorily reduced material that was definitely not based on high quality ore. This experience indicates that there are no insuperable obstacles to handling sponge iron in a basic open hearth furnace, although an electric furnace is more adapted to sponge because sponge requires a higher melting-in temperature which is more readily available in the electric furnace.

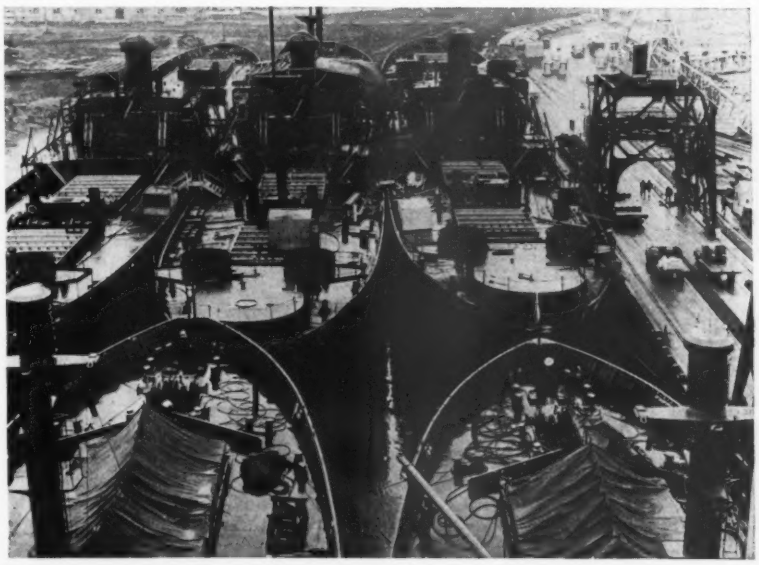
Since scrap is becoming continually scarcer, the convenience of sponge is not a paramount question at the present time, but many opponents of its use advocate dependence, instead, on pig iron.

Steel is made either in open hearth furnaces or in the Bessemer converter. The latter is a fast process giving quality somewhat inferior in certain respects and requires the use of a blast furnace to get the pig iron in the first place. Normally only about 6 per cent of the steel in the country is produced by that method.

Converter steel has been used mostly for screw stock where free cutting qualities in automatic screw machines are of more importance than intrinsic strength. Recent work by the Battelle Institute has shown that under proper conditions an improved quality of converter steel can be made that will be suitable for many other purposes, particularly certain types of steel castings.

The production of steel in basic open hearth furnaces utilizing 100 per cent pig as raw material, while technically feasible undoubtedly entails loss of capacity as compared with normal scrap melting process because of the increased refining time. Nevertheless, the manufacture of steel directly from pig iron by either or both methods is strongly advocated by a group of supposedly well-informed technologists who recommend it as preferable to sponge iron.

An impartial estimate of the future of sponge iron is that under normal conditions it cannot replace scrap as a raw material for the manufacture of steel, but under special circumstances might be made to serve as a stop-gap or balance wheel to violent fluctuations of scrap supply. Under war conditions, the crux of the situation seems to depend on the extent to which sponge iron of satisfactory quality can be made with less diversion of strategic materials than by standard methods of smelting.



• Will sponge iron help to maintain the steel supply for the Pacific Coast shipbuilding program? The accompanying article is a careful, dispassionate analysis of the possibilities of this material.

WESTERNERS AT WORK

Aviation Pioneer

Twentieth anniversary of T. Claude Ryan's entrance into commercial aviation will be celebrated at San Diego this month. Too young to get into army aviation in the last war, he was accepted as a flying cadet in the fall of 1919, did forest fire patrol in

T. CLAUDE RYAN
Celebrates Anniversary

Northern California and Oregon, and in 1922 launched into commercial aviation, taking San Diego people up in the air for short rides. Also taught flying.

In 1923 he bought six wartime army planes, remodeled them and built up a well-paying sightseeing business. Started the first year-around passenger airline in the United States in 1925, between San Diego and L. A., and soon was developing a manufacturing business also.

Built Lindbergh's "Spirit of St. Louis," kept on expanding, became a parts manufacturer also and established one of the leading aeronautical schools. Today he heads up the Ryan Aeronautical Company, the Ryan School of Aeronautics and the Ryan Aeronautical Institute. Censorship forbids telling how many people are employed in his organization.

Agent Retires

After 32½ years of service as Spokane's purchasing agent, Charles Bogart has asked for and has been granted his service retirement, effective September 1.

Tool Engineers

Karl L. Bues, manufacturing engineer for The Grove Regulator Co. of Oakland, and Floyd A. Cox, tool design engineer for Solar Aircraft Co., San Diego, are chairmen for the western area of the industrial relations and the A.S.T.E. standards committees, respectively, of the American Society of Tool Engineers, under a reorganization of the society's committees on a regional basis. Mr. Bues' committee is primarily engaged in a survey and compilation of a list of available tool engineering talent to assist the government on production engineering problems. The society will hold a war production conference at Springfield, Mass., on October 16 and 17.

Advertising-Sales Promotion

Wm. G. Chamberlin has been appointed sales promotion manager in charge of advertising for The Pennzoil Co. of California. He joined the company in 1938 as sales engineer, and in this capacity he assisted in developing much of the merchandising provided by Pennzoil to its dealers.

WM. G. CHAMBERLAIN
Steps Up the Ladder

Before joining Pennzoil, Mr. Chamberlin was with the Richfield Oil Co., and previous to that worked as assistant to the Director of Service of the Chrysler Sales Corp.

Other Pennzoil promotions are: S. E. "Chubb" Orr, Northern California division manager with headquarters in San Francisco; Bruce Doherty, Northwest division manager, with headquarters in Portland; G. G. "Gib" Brubaker, Los Angeles division manager; and L. K. "Sprat" Spratlen, Southern California suburban division manager. All men are in charge of both dealer and industrial sales.

New Secretary-Manager

Russell Bjorn has been unanimously elected to fill the position of secretary-manager of the Stockton Chamber of Commerce vacated by Ernest Landward, who has been appointed secretary of the Industrial Salvage Division of the War Production Board in Stockton, Calif.

Staff Augmented

The Southwestern Engineering Co., Los Angeles, has announced that its San Francisco staff had been augmented by the appointment of Dr. A. Tilles as electrical consultant of the Manganese Ore Co. plant to be constructed near Las Vegas, Nev. Dr. Tilles had been with the electrical engineering department of the University of California.

Traffic Manager

S. R. Newman succeeds N. B. Rader as traffic manager of United Air Lines in San Francisco. Previously, he worked in the Los Angeles office. Mr. Rader becomes eastern sales manager. Russel R. Ahrens, formerly of Seattle, has been appointed personnel director of the company's 4100 employees.

Chamber Appointment

Due to increased activities with manufacturers in war production, the Seattle Chamber of Commerce has expanded its administrative facilities. Chris Gilson has been appointed assistant general manager.

Gilson started with the chamber in 1940 in the promotion department. In 1941, he was appointed public relations director, and last January became director of the

CHRIS GILSON
Chamber of Commerce Advances Him

chamber's war production program. Coordination of the facilities of the chamber in its expanded program with local manufacturers seeking war contracts, industrial development and conversion, public relations, traffic, research, business analysis and aviation have been placed under Gilson's direction.

Rayonier Election

L. G. Wilson has been elected a director of Rayonier, Inc., in Seattle, Wash., succeeding M. A. Arnold who resigned.

New Officers

Early in August, B. M. Brown became general superintendent of motive power of Southern Pacific Lines. He has been with the company since 1911 when he was graduated from Texas A&M College with a degree of B.S., mechanical engineering. He succeeds George McCormic, who is retiring.

Other appointments were: S. M. Houston, assistant general superintendent; F. E. Russell, Jr., assistant superintendent, motive power, Los Angeles; and D. R. Calleri, master mechanic of the Rio Grande division at El Paso.

Western Representative

Dwight L. Clarke, executive vice president of Occidental Life Insurance Co. of California, has been appointed to membership of the executive committee of the Insurance Economics Society of America. He will serve as western representative on the committee, which will make a study of accident and health insurance and its relationship to socialized service and economic trends.

Elected Director

Francis S. Baer has been elected a director of the Bank of America and appointed vice chairman of the board, according to a recent announcement made by L. M. Giannini, president. He will make his headquarters in San Francisco.

Mr. Baer started his banking career in 1915 with the First National Bank of Pasadena, later becoming vice president of the Security-First National Co.

American President V.P.

E. Russell Lutz has been elected vice-president, executive department, of the American President Lines with headquarters at 311 California St., San Francisco.

Committee Chairman

Asa V. Call, president of the Pacific Mutual Life Insurance Co., Los Angeles, Calif., has been appointed chairman of the Committee on Post-War Economics of the California State Chamber of Commerce. The committee is engaged in studying and preparing plans for post-war adjustment of California's industrial and business economy.

New Officers

At the recent meeting of the Pacific Coast Wholesale Hardwood Distributors' Association, held in Del Monte, Calif., the following officers were elected: President, Adolph E. Wanke, Wanke Panel Co., Portland, Ore.; vice president, Charles M. Cooper, W. E. Cooper Hardwood Co., Los Angeles, Calif.; secretary-treasurer, Dallas Donnan, Ehrlich-Harrison Co., Seattle, Wash.

Manpower Commission

William K. Hopkins has been appointed regional director of the War Man Power Commission. He is taking an indefinite leave of absence from Columbia Pictures where he was director of industrial relations.

WILLIAM K. HOPKINS
Directs War Man Power

Mr. Hopkins, in turn, has appointed H. R. Harnish, Los Angeles labor supply executive, as head of the Southern California area; and General H. G. Windsor, long active in handling labor problems, as head of the Pacific Northwest.

OWI Chief

Dean Jennings, has been appointed regional director of the News and Radio Bureau of the Office of War Information, with headquarters in San Francisco. Harry E. Flanagan will act as his assistant.

Educational Advisor

Lyman Bryson, chairman of the Adult Education Board of the Columbia Broadcasting system, has been appointed educational advisor in the Office of War Information, Seattle, Wash.

Field Representative

Alfred R. Rochester, former Washington state director of the Office of Government Reports, has been appointed field representative of the Bureau of Public Inquiries, a department of the Office of War Information. He will maintain his headquarters in Seattle, Wash.

Lumber Production

Robert P. Conklin, logging engineer for Weyerhaeuser Timber Co., Kelso, Wash., has been selected as principal logging engineer in charge of log supply problems; and George Herington, Portland, Ore., has been appointed Divisions Special Representative for the Pacific Coast log and lumber industry.

To Washington

Herman D. Nichols, vice president of Tubbs Cordage Co., San Francisco, has taken a leave of absence for the duration to serve with the War Production Board in Washington as Hard Fiber Consultant and Principal Industrial Specialist of the Bureau of Industrial Conservation. His work largely will be devoted to conservation methods for existing fiber supplies and the development of new fiber sources for war, industrial and civilian use.

Insurance Division

L. J. Haefner, marine secretary, Fireman's Fund Insurance Co., San Francisco, Calif., has been appointed to a position in the wartime insurance division of the War Shipping Administration in Washington, D.C. He has been associated with Fireman's Fund since 1906.

WPB Appointment

Raymond J. Briggs, Boise, Idaho, consulting engineer and president of the Idaho Society of Engineers, has been appointed

RAYMOND J. BRIGGS
Idaho Manager for WPB

district manager of the WPB. He will have administrative charge of the Conservation, Production and Priorities division for Idaho.

Deputy Manager

Albert E. Pierce, former Seattle street railway superintendent and supervising analyst of the Priorities Section of the WPB's state office was named deputy manager of the Inventory and Requisitioning division of the Seattle Regional WPB.

Uncle Sam Beckons

Victor E. Bertrandias, vice president, Douglas Aircraft Co., colonel in the army.

Dwight L. Merriman, president of the San Francisco Chamber of Commerce, first lieutenant in the air corps.

Mertin Wade, Jr., of Henry F. Swift & Co., San Francisco, lieutenant commander in the navy.

Resources For Victory Here

Western Possibilities Must Be Tapped for Supplies In War Effort

By ERIC A. JOHNSTON
Brown-Johnston Co., Spokane, President, U. S. Chamber of Commerce

NO one thing will win the war. Victory will come only through the fullest use of every resource that the American people and their allies can muster.

To win, we need men—by the millions—and ships, tanks, guns, planes and all of the things required for modern warfare.

Extraordinary demands of the war industries are bringing shortages of almost every conceivable kind of material. In fact, limits of supplies for the war production effort are definitely in sight. Accordingly, the job to be done is not merely one of expanding production, through the use, to the greatest advantage, of the materials now available, but also the development of new sources of materials as well.

That is where the West comes in. With their tremendous stores of raw materials, hitherto regarded as almost unlimited, the Western states must be tapped to the utmost for new sources of things that go into war production, directly or indirectly. Developing them to the fullest possible degree will help materially to widen what has become a most troublesome bottleneck. The nation is fortunate in that it possesses this vast storehouse to draw upon.

Obviously, too, the West has come to another important place in the war economy, a place that it will continue to occupy when peace is restored. Overworked transportation facilities make necessary the narrowing of distances between sources of supply and points of fabrication.

Moreover, the West will need construction on a large scale. For its millions of workers homes and facilities will be required. These are no less essential than manufacturing plants.

War Waifs In Supplies Also

An incidental result of the Japanese conquest of Malaya is that lumbermen in the Pacific Northwest are learning how to use two-edge axes, and contractors building military establishments, defense housing and Japanese relocation projects in the western states are getting accustomed to Whitworth-thread pipe instead of the U.S. Standard.

These materials were in the warehouses of Pacific Coast ports awaiting shipment when the Pearl Harbor blow fell, or in some cases already out at sea. The consignees in the Malay States, Java or other places now under Japanese control are now either missing, prisoners of the Japanese or carrying on their business as best they can without being supplied from the United States.

To put such unclaimed items to good use, the Inventory and Requisitioning branch of the War Production Board has been selling them and impounding the money for the benefit of the owners when they can be reached again.

Standard thread pipe is used in the United States, and Whitworth thread in other countries. About 500,000 feet of the latter type pipe has already been disposed of. An international standard for pipe thread is a possible outcome of the war.

Among other materials diverted, H. C. Falkell, district manager at San Francisco for the Inventory and Requisitioning Branch of WPB, reports the following:

Flour from Canada has gone to Russia, and electrodes from the U. S. to Australia for furnaces. Surgical gauze for Hongkong has been turned over to the U. S. armed forces. Pyrethrium, an insecticide and rodent killer, accompanies our task forces. Electric motors, mostly 220 or 440 volt, have been purchased by various other users. Similarly with duck dyestuffs and many other items.

Softwood Production

Through a record effort during the second quarter, softwood production in the west coast region during the first six months of this year was approximately 25 million feet more than the 4,245 million feet in the comparable months of 1941. The second quarter's output was the highest quarterly volume since 1929.

Camp Doubled

Between $13,000,000 and $15,000,000 will be spent to virtually double the size of Camp Cooke, in Santa Barbara County, California. The new construction is intended to take care of an additional division of 15,000 men. Other construction in that area includes an army bomber base at Orcutt, a Marine Corps air base at Goleta, and a $300,000 military airport in the Santa Ynez Valley.

Yucca Harvest

Yucca, a desert plant having a vegetable fiber which may be used for Manila hemp or jute, may be harvested this year from public lands under Secretary Ickes' control. He has issued orders permitting the harvest under restrictions that will not waste resources or cause fire or soil erosion hazard.

Resume Production

Peterbilt Motors Co., Oakland, and Kenworth Motor Truck Corp., Seattle, have been granted authority by WPB to manufacture, respectively, 20 and 30 trucks each of 17,500 pounds gross weight or over.

Gearing Up For Higher Speed

Production Records Topple in West Coast Manufacturing Establishments

PACIFIC COAST shipyards and other manufacturing plants rank high in performance records recognized by the government.

Oregon Shipbuilding Corporation at Portland, managed by Edgar F. Kaiser, which already held the national record for most ships per way, constructing a ship in the shortest time and producing vessels in the shortest average time per ship, has been given its third merit award. This is a second gold star to add to its "M" pennant, for maintaining the record for which the first star was awarded in July, namely, for having delivered one ship from each of its eleven ways in an average of less than 105 days from keel laying.

In second position for the number of ships produced per way is the California Shipbuilding Corporation at Wilmington, California—Los Angeles harbor. That yard ranks third in the shortest production time for a ship.

Holding second place in total number of ships built are the Richmond Shipyards at Richmond, California, also under Kaiser management. Both U. S. Liberty and British ships have been produced there. They rank third in the number of ships built per way and second in the average production time per ship.

Byron Jackson Co. of Los Angeles was presented with two Army-Navy Production Award flags, one for the Vernon plant and the other for the Slauson factory. A double presentation ceremony was held at the Vernon plant.

Rheem Manufacturing Co., which has been awarded the navy "E" pennants for its plants at Richmond, Calif., and Newark, N. J., has had them renewed and extended with the award of a combined Army-Navy "E" with star.

Electric Steel Foundry, Portland, has been awarded the Navy "E" for quick dispatch and excellence of workmanship.

Seattle's Growth

Seattle's population has increased 65,000 in the past year, according to D. K. MacDonald, president of Seattle Chamber of Commerce, and estimates fix the growth since 1940 at between 115,000 and 140,000. The State Rationing Board, from sugar rationing, computes the present population at 508,700. The chamber predicts that 60 per cent of the employment will be in manufacturing and mechanical industries by the end of 1942.

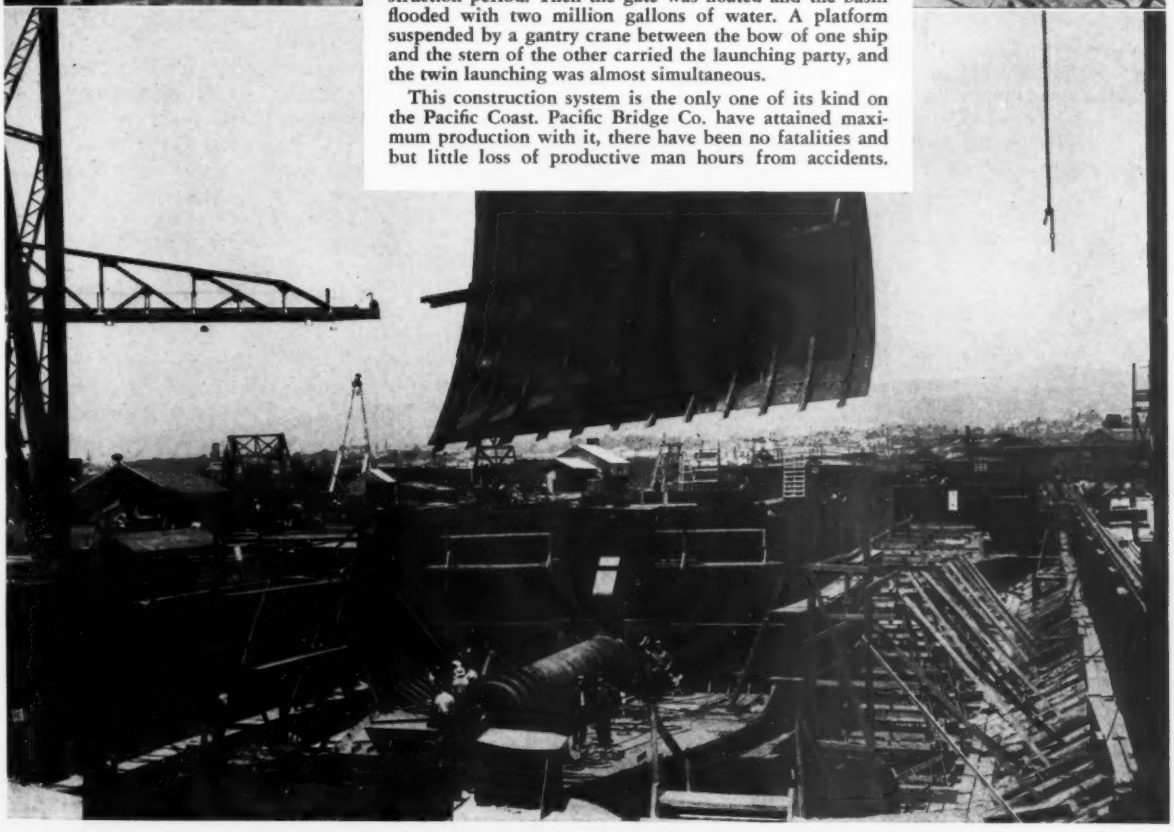
"Saw Record, Sank Same"

Twenty-two working days after the keels were laid, the "sunken shipyard," or graving dock at Yard No. 1 of Pacific Bridge Co. in Alameda, California, launched the Reuben Snow and Caleb Sprague on August 25, breaking all records in ship production.

Laid end to end, eight feet below the water level of the Oakland Estuary, the two cargo ships were constructed under a graving dock operation, along with the pre-fabrication production system.

A huge caisson gate kept the water out during the construction period. Then the gate was floated and the basin flooded with two million gallons of water. A platform suspended by a gantry crane between the bow of one ship and the stern of the other carried the launching party, and the twin launching was almost simultaneous.

This construction system is the only one of its kind on the Pacific Coast. Pacific Bridge Co. have attained maximum production with it, there have been no fatalities and but little loss of productive man hours from accidents.



Wee Bit More in Every Car Ups the Supply

First Quarter of 1942 Shows Big Savings Made By Railroad Shippers Over Last Year Through Better Utilization of Space

BY LOADING just 89/100ths of a ton more in every car of carload freight in the first quarter of 1942 than last year's average loading, railroad shippers have protected their supply of transportation equipment to the extent of saving 212,245 cars, or four days car supply for the entire United States. Even greater savings are expected to follow in succeeding months.

This means that many shippers had to increase their loadings far more than this fraction of a ton in order to bring up the average for the entire country, because many commodities already were being loaded to capacity.

The national average in 1941 was 36.67 tons per car, says H. A. Huckaba, district manager at San Francisco for the car service of the Association of American Railroads, while this year it has been punched up to 37.56 tons.

Almost 40,000,000 more tons of carload freight were moved in the first quarter of 1942—39,864,956 tons, to be exact—the 1942 total being 286,556,198 tons. It required 7,629,205 cars to move this tonnage, or 900,217 more cars than were employed in the same period last year.

By stepping up its average weight per car, one cement firm saved approximately 600 cars in a single month. Another cement organization saved 264 cars. An increase in the average load of steel cars by one shipper from 76,000 to 86,000 pounds saved 50 cars a month. Another shipper saved 18 cars by boosting the average loading of billets, and a flour miller doubled the number of barrels loaded and turned over 100 cars to other shippers.

Besides heavier loading, faster handling of cars and greater care in ordering them are contributing to the speed-up of transportation service, with pamphlets, bulletins, sales letters and stickers helping to urge the importance of uninterrupted railroad service.

Here are a few examples of shipper cooperation from the West:

One shipper on the Pacific Coast lets the freight car tell its own story by using stickers on bills of lading and other correspondence bearing the following message: "Please unload me quickly. I've got a big job to do and can't be loafing. My country needs me! Yours for car conservation."

Potato growers in Kern County, California, had 26,896 tons of potatoes to ship, which would normally require 1,775 freight cars. By loading three extra tons of potatoes in each car, they got their crop into 1,499 cars, releasing 276 badly needed cars for other purposes.

A sugar refinery in the West is instructing its shipping department to "load all cars to their maximum capacity, regardless of destination."

A West Coast lumber organization is pointing to the extra trips that cars could make as a result of faster loading and unloading.

Fifteen suggestions for building up the car supply are as follows:

1. **Translate the will to do into actual doing by arranging for traffic executives to know definitely each day the cars on hand for loading or unloading, and the length of time held, so that delays may be promptly handled for correction.**
2. **Give advance notice of car needs, including size, type, destination and route—but do not order cars placed until the lading is ready.**
3. **Avoid ordering cars in excess of actual requirements.**
4. **Order cars only from the road or roads directly serving your plant. Do not call directly upon other roads for cars because this often entails cross-haul empty movement and other wasteful results.**
5. **Remove all dunnage, blocking and rubbish so that cars can be re-used immediately, without reconditioning delays.**
6. **Notify the railroad promptly when cars have been unloaded, and report to some responsible railroad officer any avoidable delays in removing empty cars from private sidings after release.**
7. **Utilize regularly scheduled switching service instead of requesting special switching.**
8. **Cooperate by not rejecting cars that have been approved by railroad inspectors for loading of the commodity to be shipped, unless absolutely necessary.**
9. **Load cars to, or in the direction of, owner's rails.**
10. **Curtail requests for tracing of shipments, and for preferential empty movement of cars.**
11. **Prevent damage to high class cars, and consequent lost car days, by not loading them with contaminating commodities.**
12. **Load cars to full load limit *as stencilled thereon,* or to full cubical capacity.**
13. **On minimum carload orders, use one car for shipments to two different consignees at the same destination.**
14. **Avoid the seasonal peak of carloadings by shipping commodities, wherever possible, either before the middle of September, or after the end of October.**
15. **Purchasers of goods can aid by anticipating their needs; by combining orders to make car loads; and by indicating on orders for large quantities, "Ship maximum carload weight or full cubical capacity."**

ODT SAYS "MUST DO"

Maximum loading of cars carrying civilian freight becomes compulsory Sept. 15. Railroads are prohibited from accepting for shipment any freight cars which are not loaded either to their marked load limit or to their full visible capacity. Tank cars, flat cars, and cars containing less-than-carload freight are excluded.

Million Kilowatts For Western Plants

More than a million kilowatts of power will be added to the nation's war supply by July 1944 at five Bureau of Reclamation multi-purpose irrigation projects in the West.

The huge additions will bring the total operating capacity of reclamation power plants in 12 states to 2½ million kilowatts. The potential annual output will be more than 20 billion kilowatt-hours.

Four generators of 30,000 kilowatts each will be installed at Parker dam, two 75,000-kilowatt generators at Grand Coulee dam originally ordered for Shasta dam but shifted to make their output available to war industry a year sooner, and an 82,500-kilowatt generator at Boulder dam.

Others for which priorities have been obtained by the Department of the Interior are:

Green Mountain dam, Colorado Big-Thompson project, Colorado; two generators of 10,800-kilowatt capacity each.

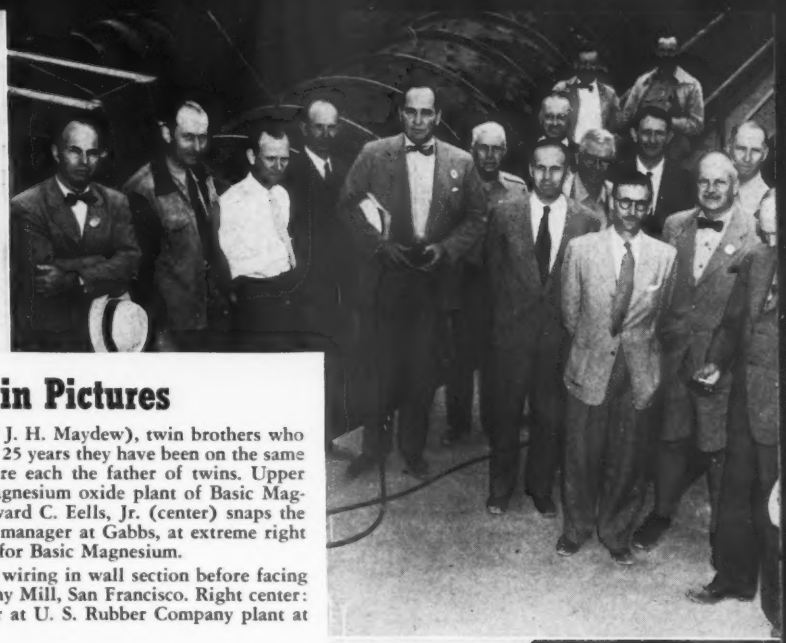
Grand Coulee dam, Washington; three enormous hydro generators (largest in the world of 108,000 kilowatts each), bringing the total capacity of the Grand Coulee plant to 818,000 kilowatts—second only to Boulder in size.

Boulder dam, Arizona - Nevada; generator with capacity of 82,500 kilowatts, bringing the total installed capacity at this largest power plant in the world to 1,032,000 kilowatts.

Shasta and Keswick dams, Central Valley project, California; three generators of 75,000 kilowatts each at Shasta, two generators of 25,000 kilowatts each at Keswick.

Chrome Ore Depot

Establishment of a chrome ore stockpile and purchasing depot at Gasque, on the Smith River in Del Norte County, to eliminate an expensive and delaying long truck haul to Grants Pass has been recommended to the Metals Reserve Company by Bruce McDonnell, chief of the California State Bureau of War Minerals Production. He said thorough investigation of Del Norte and Siskiyou counties had revealed existence of 13,920 tons of good chromite ores.

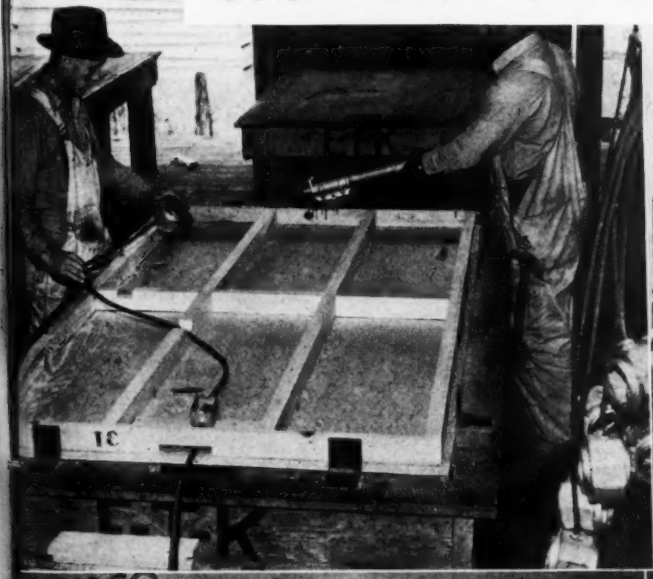


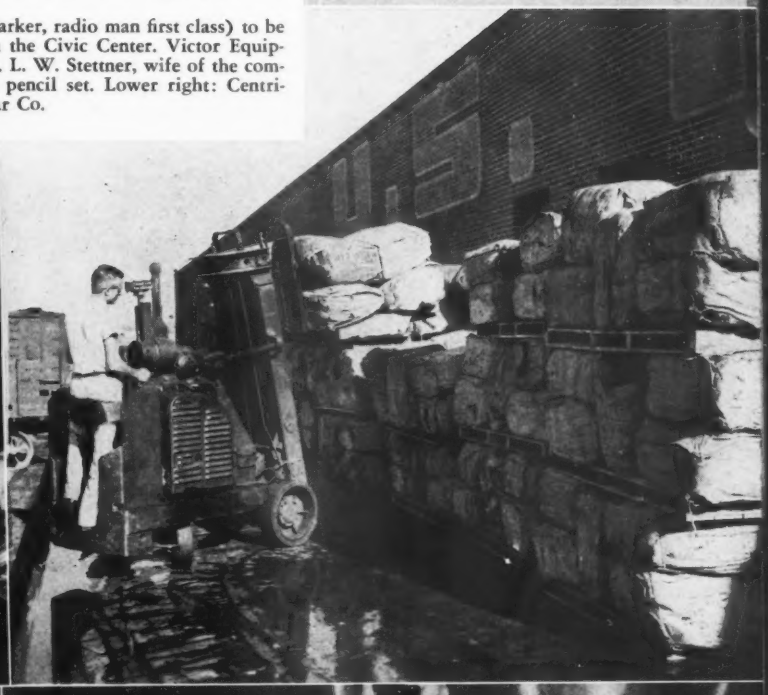
Western Industry in Pictures

• Upper left: "Pete" and "Re-peat," (D. H. and J. H. Maydew), twin brothers who are carpenters at California Shipbuilding Co. For 25 years they have been on the same job with each other. Also married sisters and are each the father of twins. Upper right: Production starts at the Gabbs Valley magnesium oxide plant of Basic Magnesium, Incorporated, in Nevada. President Howard C. Eells, Jr. (center) snaps the switch. At Eells' right is W. W. Patnoe, project manager at Gabbs, at extreme right of picture is Howard C. Mann, project manager for Basic Magnesium.

• Left center: Pre-fabricated housing. Installing wiring in wall section before facing is glued and nailed, in Robert McCarthy Company Mill, San Francisco. Right center: Lift trucks make short work of handling rubber at U. S. Rubber Company plant at Los Angeles.

• Lower left: Millionth service man (Charles V. Parker, radio man first class) to be welcomed at San Francisco's Hospitality House in the Civic Center. Victor Equipment Company were joint hosts with the city; Mrs. L. W. Stettner, wife of the company's president, presents Parker with a pen and pencil set. Lower right: Centrifuging sugar at Woodland plant of Spreckels Sugar Co.





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Washington Wagers Kaiser Will Win

Battle Over Building Cargo Planes Is Sign of the Irresistible Urge for More Aggressiveness In Prosecuting War Effort

By ARNOLD KRUCKMAN

IT IS perfectly safe to give 100 to 1 odds that Henry Kaiser will build those cargo planes. He will, unless he decides he does not wish to. The demand that *he* find the metal and the labor and the engineers and all the special skills and facilities and critical materials, is just shadow-boxing.

Everybody here knows we need the cargo planes even more than we need more ships, right now; and cargo planes will be built, and the war agencies will find the materials and the men and the rest of it to build them.

This demand that Kaiser find the stuff to make the planes is about as reasonable as to ask the soldier to find his guns and bullets after he gets into the battle. That is what these millions of civilian bureaucrats are for, and that is what they will do, *after* the ground is cleared of the interfering brush of old-line manufacturers, old-line service people and vanishing WPBers.

After all, it is understandable that any outfit like the Kaiser crowd, with a reputation for miracle-making, should be opposed by old-line, conservative merchantship builders, whose plums would grow scarcer if the funds and materials are put into cargo planes.

And it is just as understandable that established airplane organizations which have figured on cargo planes as their legitimate gravy, when they are ready for it, would buck the ship-building general contractor from the wild and woolly West who wishes to break into another new field.

By the same token you should be able to grasp that the old-line experts of the armed services in all honesty are reluctant to give new things a trial. It hasn't been done that way, and they are afraid of the untried.

But this inertia is one of the conditions that will be blasted away, because Washington is beginning painfully to realize that we will lose the war unless we snap into new ideas and use new men. Everybody knows cargo planes are an inevitable step along the new route; even WPB has evolved an approving committee report.

By the same token you probably realize WPB and Donald Nelson most definitely are on the skids. The pressure already is so great they may not survive until after the elections. The whole mess here is so obviously bad that many of the so-called responsible officials calmly and coolly tell you how bad it is.

Common talk is that WPB will pass out, and that the organization you know as WPB will be kneaded into a new over-all creation to include OPA, OCD, ODT, OWI, and the other civilian war organizations. They speak of the prospective all-inclusive institution as the Division of Economic Control.

The general idea here is that Leon Henderson will probably be head of this new organization. Henderson has myriads of enemies. He is the kind of man who makes enemies. He does not make many real friends. But he inspires the confidence that he can do things. OPA is by no means a shining example of accomplishment. But in contrast to WPB and other agencies, and in the light of its incredible difficulties, it stands out like a beacon in this Washington welter.

Henderson is tough, ruthless, intelligent, ambitious, realistic, practical, and radical. And he has enormous personal energy and force. If he vaults to great power it is just as reasonable to assume he will smash all old idols and ideals as that he will go along paths which we know and which are our ancient goals.

The War Labor Board unquestionably reflects some Henderson thinking in its Little Steel decision which sets the wage

One of the best-informed writers at the Nation's Capital, Arnold Kruckman, presents each month authoritative comments on political developments and their practical application to industry of the West. Any reader who wishes additional information may write to him directly, using business letterhead, at 1120 Vermont Avenue, N.W., Washington, D.C. Inquiries will be answered free of charge. You also are invited to contact him personally in Washington. Copies of pending congressional bills may also be obtained free of charge.

formula on the basis of cost-of-living increases up to April 27. Wages that fit will be held at this level until more rises in living costs occur. Wages that do not fit will be moved up to the April 27 level, and will continue to go up as the prices go up.

Tin, and any other metal for canning, is out. They tell us here, despite anything that may have gone before, you in the West are about to witness a huge expansion in dehydration. Laboratories here in the East are working overtime for the government to uncover new methods of dehydrating new foods. This war is expected to last five years or more, and we are expected to feed the nations on our side that stay in the fight. The obvious problems of transport force further compression of cargoes.

There is scarcely a food you grow out there that will sidestep the process of dehydration. And it is expected your whole western slope will be made to bloom like an eastern farm area with new irrigation projects. Ickes has sent out the word to push development of irrigation for expansion of present projects and to make new projects as quickly as is possible.

There are amazing figures on the potentials they calculate in new production out there. All this expansion is expected to pour a large part of its produce into the prospective dehydration plants. These plants are expected to take the place of most of the present factories in the West where they make tin cans and where they can the fruit, fish, meat, vegetables and other products out there. They tell us here that it will be easy to convert existing plants out there to the process of dehydration.

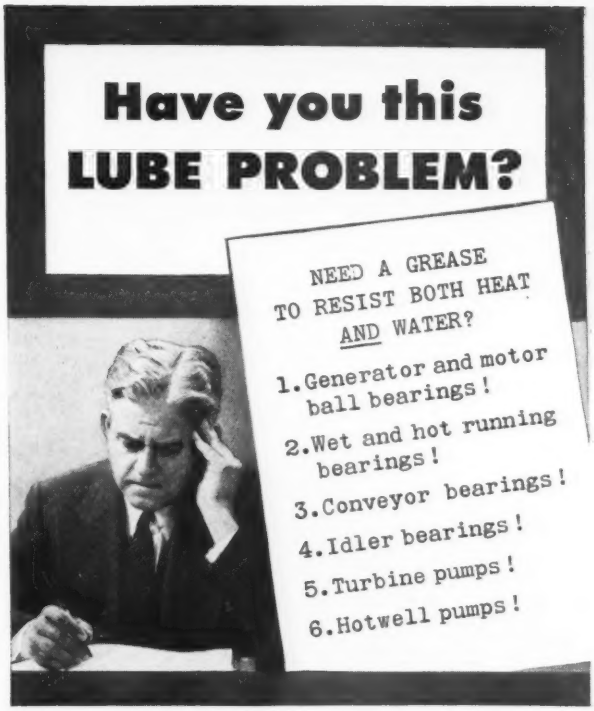
Bear in mind, also, you will shortly feel the full impact of the elimination of "cross-hauls." Ships, railways, and airways will bring from places far away only the materiel and the fabricated things absolutely needed in the war itself. You have been told not to rely upon the East and other remote sections of the country for the things you need in your civil life, no matter how urgent.

Anything that involves cross-hauls will swiftly cancel out. And impress upon your mind that the term "cross-haul" applies to hauls *within* a region and *around* localities as well as to hauls from a distance.

For the duration we apparently will follow the British pattern of existence. We will cut out competition, standardize goods and services and prices and earnings and habits, and make everything as simple as possible. On the farms, where it has begun, they call it cooperation.

In the State of Washington, several hundred farmers, in a famous valley, needed trucks. There were hundreds of idle new trucks in the community town. The farmers were induced to be content with the use of 12 trucks used cooperatively.

In another state 60 farmers with 350 acres in oats and beans telescoped their needs by using three grain combines jointly, for which they paid $5 an acre.



Have you got a *tough* lubrication problem where grease must resist *both* heat and water? Then Unoba—Union's new barium soap grease—will solve it.

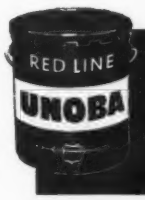
Unoba Resists Both Heat and Water!

Ordinary sodium soap greases resist heat, but not water, while calcium soap greases resist water, but not heat. That's why Union engineers developed Unoba—*a barium soap grease.* It resists *both* heat and water—stands up under the toughest wet and hot-running conditions.

Test Unoba Yourself!

First, be sure to clean any parts to be lubricated, so that none of the old calcium or sodium soap base grease remains. Second, test Unoba by giving it your toughest lubricating problem. See if you don't find it's the best all-round lubricant you've ever used.

Call your Union Oil representative today! Ask him for Unoba—the grease that resists *both* heat and water.



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LABOR

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Lumber Wages Better Than in the Shipyards

The lumber industry in the Pacific Northwest faces disaster within a few months for lack of loggers, according to F .H. Brundage, Western Log and Lumber Administrator for the WPB, despite the fact that loggers actually get better pay than in the shipyards. Stocks of logs in the Columbia and Willamette rivers are only half the normal supply of 500 million feet.

"I recently looked over the composite hourly wage rate of eight major logging concerns," he said, "and found it to be $1.18 per hour on the average, which is but a fraction under the shipyard scale of $1.20 per hour for carpenters and welders. Wages for fallers and buckers at these same eight camps averaged $1.34 per hour.

"Shipyard workers are entitled to 52 hours work a week, based on 40 hours of straight time and 8 hours of overtime at time and a half. A competent faller and bucker working on the time schedule would actually earn $7.28 more per week than the man in the shipyard."

Shipbuilding in California in June 1939 reported average earnings of $39.76 per week; in June 1942, $54.57, an increase of 37.2 per cent. Aircraft gave as comparable figures $30.43 and $43.73, or an increase of 43.7 per cent. In retail trade, June 1939 average earnings were $24.49 and in June 1942 $25.56, an increase of only 4.4 per cent.

Safety Rules For Women Established

To protect women in industry from injury, the California Industrial Accident Commission has ordered that employers shall require all women whose work exposes them to the risk of injury from moving parts of machinery to confine their hair and wear outer garments designed to avoid entanglement in machinery. The Commission discourages loose sleeves, tails, full skirts, flounces, ties, frills, lapels, cuffs, and similar garments, soft slippers, high-heeled shoes, sneakers or open-toed shoes. Also gloves which can be caught in moving machinery.

Employers must supply foot guards where there is a hazard of foot injuries, protective hand covering suitable to prevent cuts, burns and skin diseases. They must also supply and enforce the use of adequate eye protection in occupations where the eyes are customarily exposed to injurious light rays, flying particles or similar hazards.

A rule against wearing wrist watches, pendant earrings, necklaces, or other pendant ornaments, bracelets or finger rings while working around moving machinery must be enforced by employers.

Interpretations Of Minimum Wage Law

Recent interpretations by the Division of Industrial Welfare of the new $18 minimum wage for women in California manufacturing industries include the following:

Upon proof of the U. S. Employment Service that experienced workers are not available, special exemption for learners may be permitted one of the following alternatives:

20 per cent learners @ 30c hr. for 160 hrs.; @ 37½c hr. for next 160 hrs.; thereafter $18 a week.

25 per cent learners @ 30c hr. for 160 hrs.; @ 37½c for next 80 hrs.; thereafter $18 a week.

50 per cent learners @ 40c hr. for 320 hrs.; thereafter $18 a week.

Employees who do not desire to work a 40-hour week because of personal reasons shall be paid not less than the 45c rate for experienced workers or the applicable learners' rates for the actual hours worked during that particular week.

The employer must have satisfactory evidence of the employee's desire to work less than the full week, together with evidence that a full week's work was available to that employee.

Minors who are unable to work a 40-hour week because of the legal requirements for school attendance shall be paid not less than the rates indicated above.

The 45c rate is permissible if the short hour week is followed by a full week of employment. If it is preceded by a full week of employment and the employee resigns or is discharged for cause (not for lack of work) the 45c rate may be paid.

Holiday weeks require the 50c rate if the hours worked are less than 36.

Campaign To Hire Women in Seattle

Seattle is attempting a solution to the problem of housing 60,000 new war workers, who will be needed by the end of 1942, by calling for volunteer local women workers to register with the Civilian War Commission, in order to cut down the influx from outside. Registration of the Seattle women on August 4, 5 and 6, resulted in the signing up of 6,000. Those who were proved capable of handling a job in the many war industries of the city are now being placed, and when the first volunteer group is assigned, another registration is contemplated.

The placing of available and efficient Seattle womanpower is expected to relieve both the critical labor and housing shortage and, while the first registration proved disappointingly small, it is believed that subsequent calls for women volunteers will receive more serious attention and a larger volume of recruits.

While it is probable that as many as 9,000 dwellings may be made available by building or conversion in Seattle this year,

(Continued on page 23)

WOODS ARE FULL OF IDEAS, IF YOU ASK FOR 'EM

Enough time to build ten extra bombers or flying boats saved since January 1, 1942 at Consolidated Aircraft through adopting employee suggestions; the cutting time on steel pipe at Associated Ship Builders reduced from 30 hours to 12 minutes; $322 to one Vultee employee for his idea how to eliminate Dzuz buttons on the engine cowl muff; a burning machine invention at Richmond Ship Yard No. 1 that speeds up the operation 30 per cent.

These are some of the recent results of employee suggestions and inventions in war industries on the Pacific Coast. Roscoe Lohmeyer, the welder at Associated Ship Builders who solved the problem of cutting steel pipe into half or third rounds for minesweepers, was awarded a War Production Board medal on August 21 for distinguished service.

Instead of a cold cut with cutting tools on a giant lathe, with constant applications of graphite and frequent stops for adjustments, acetylene torches had been tried, but the heat distorted the pipe. Lohmeyer figured out that if heat was applied at the other side of the pipe at the same time, there would be no distortion, so now a ring of acetylene torches is fitted around the pipe.

G. E. James at Vultee suggested installing the engine cowl muff with machine screws—and now the Dzuz buttons don't dzuz any more. Among other Vultee awards was $132 to Ed Smith for a method of reducing the number of bolting operations necessary for the drilling operations on the center section.

Five suggestions by H. O. Sawyer, leadman at Consolidated, resulted in an estimated annual saving of 11,111 man hours. For 11 of them approved since June 1, he has received $383 in cash and war bonds. Consolidated's economies since January 1 total 339,070 production man hours, making a money saving of $305,327, with cash awards of $6,732.50 to employees, the highest individual prize being $450.

The improved burning machine at Richmond was conceived and put into use by Earl L. Kinney, a burner supervisor, in one day. It does the work of several other burning machines.

(Continued from page 22)

applications for houses are being received by the Civilian War Commission at the rate of 40 a day and a shortage of approximately 3,000 houses exists at present.

Estimates forecast that at least 25 per cent of the employees of business and industry in Seattle in 1943 will have to be women.

Swapping Branch Of WPB Is Busy

To transfer the essential material from the shop, yard or ware house of the man who can't use it or doesn't know he has it, into the hands of the man who is in despair because he can't get it, is the job the Inventory and Requisitioning Branch of the WPB has set out out to do.

Part of the time the work seems like trying to find needles in haystacks, according to W. D. Cloos, Regional Chief, but there are occasional bright days. For instance, the occasion when Standard Oil Company of California walked in and reported 250 tons of steel plate, intended for building oil tanks, which they were willing to release. Inside of 48 hours the steel was being made into ship plates at one of the nearby shipyards.

Then there was the day Associated Oil Co. asked to have 1500 tons of frozen lead scrap taken off their hands. It was promptly released and turned over to Federal Metals for re-smelting. And still another time a machinery manufacturer decided to go through his stockpile, with the result that a pleasantly large amount of forgotten aluminum sheet, strip and wire came to light.

Joyful as are some of the recipients of the critical materials, the firms selling them are often even more firmly convinced that it is more blessed to give than to receive. For instance, Davis Hardwood Co., with 9,400 board feet of teakwood which might have graced a lot of homes, yachts or what have you, had not bombs fallen on Pearl Harbor. The teak came in very handy for new ship construction. Or Schlage Lock Co. with 3300 pounds of brass rod, about as useless to them as Japanese tea sets or fire screens after certain types of locks were frozen; elsewhere, however, the brass was badly needed. Or the owners of 73,000 square yards of metal lath, frozen for civilian use but highly critical for military construction.

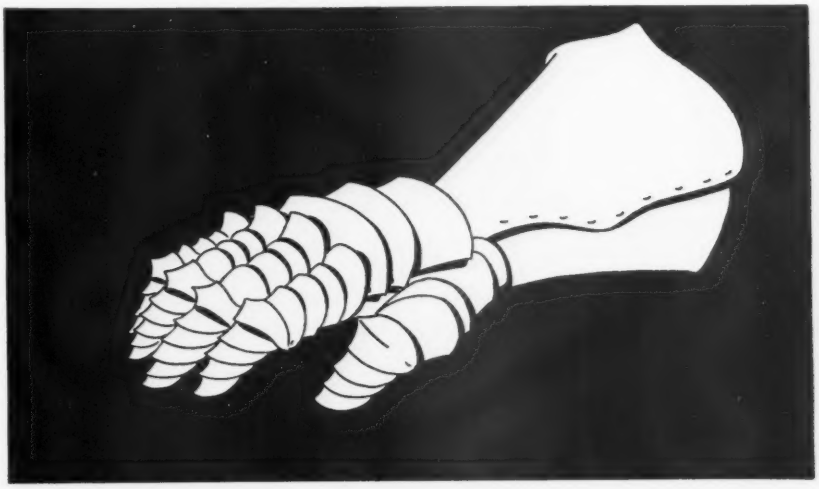
If you were stopped from manufacturing hair curling machines, powder compacts or other end products, the Inventory and Requisitioning Branch will help you dispose of the aluminum, tin and other materials you had on hand. Same thing if you were selling refrigerators, stoves, etc. Some of them may be needed in war housing projects.

Principal functions of the IRB were explained by E. A. Tupper, chief of the branch, and Russell Duncan, chief of its field sections, on their recent visit to the field service offices at San Francisco, Los Angeles and Phoenix.

There are six salvage programs in operation, on aluminum, white metal, nickel anodes, magnesium, Brittania metal and copper, with others to come. These materials are bought by the appropriate agencies and re-channeled into productive activities. The IRB also assists holders in bypassing red tape in moving materials that are either frozen or else require special approval for disposal. Requisitioning powers are available when circumstances prevent transfer of title or the owner or holder is unwilling to let go. As yet no balky ones have been encountered on whom requisitioning would have to be invoked.

We Also Serve . . .

A booklet prepared by the Stauffer Chemical Company explaining how essential chemicals are to the war effort. All chemicals are named and their uses given. There are illustrations of an airplane, battleship, tank and uniformed soldier which indicate the numerable chemicals used in the operation and manufacture of each. A brief history of the company is included. Copies may be obtained by writing Stauffer Chemical Company, 636 California St., San Francisco.



They Threw Down the Gauntlet—STAUFFER Accepts the Challenge!

Chemicals are vital in war—not only in making machines and ammunition but for scores of industries closely related to the war effort.

Heavy demands have been placed upon us—but STAUFFER accepts the challenge. We have enlarged our plants, increased the shifts and stepped up production. We are producing Chemicals for everybody. There are no chemical bottlenecks for industry. Stauffer will continue to meet the demands.

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STAUFFER CHEMICAL CO.

Near Infra-Red Saves Paint Baking and Drying Time

By PAUL H. KRUPP
Fostoria Pressed Steel Corp.

MUCH has been written about the wasted "Golden Months" prior to "Pearl Harbor" and the "Silver Months" that remain in 1942 for retooling and all-out production.

As a general rule, however, the aircraft industries were really making the months prior to "Pearl Harbor" golden-production months in many respects.

A year ago, many of the aircraft plants already realized the importance of new, quick methods and consequently had investigated the Near Infra-red Process—one of the newer industrial tools for paint baking, drying, dehydrating and pre-heating.

Investigations in most cases proved that near infra-red equipment was the logical answer to multiple problems and that this equipment in addition to solving particular problems, was flexible enough for several operations; occupied comparatively small floor space; allowed visibility of product during operations; offered lower investment cost, and cut out stand-by loss of energy. In many cases, near infra-red equipment can be mounted on the ceiling.

Lockheed Aircraft Corp., as early as February, 1941, realized that answers had to be found on finishing problems to keep their orders rolling. Lack of floor space necessitated equipment that would do a quick, complete job so that material could move directly on to further fabrication or completion.

Near infra-red equipment was the answer. Alclad aluminum sheets of various thicknesses are given a spray coat of zinc chromate primer, placed on a flat conveyor that passes under a flat bank of lamps, and is dry in 30 seconds. These sheets are later given additional coatings and formed into fuselage and other plane parts.

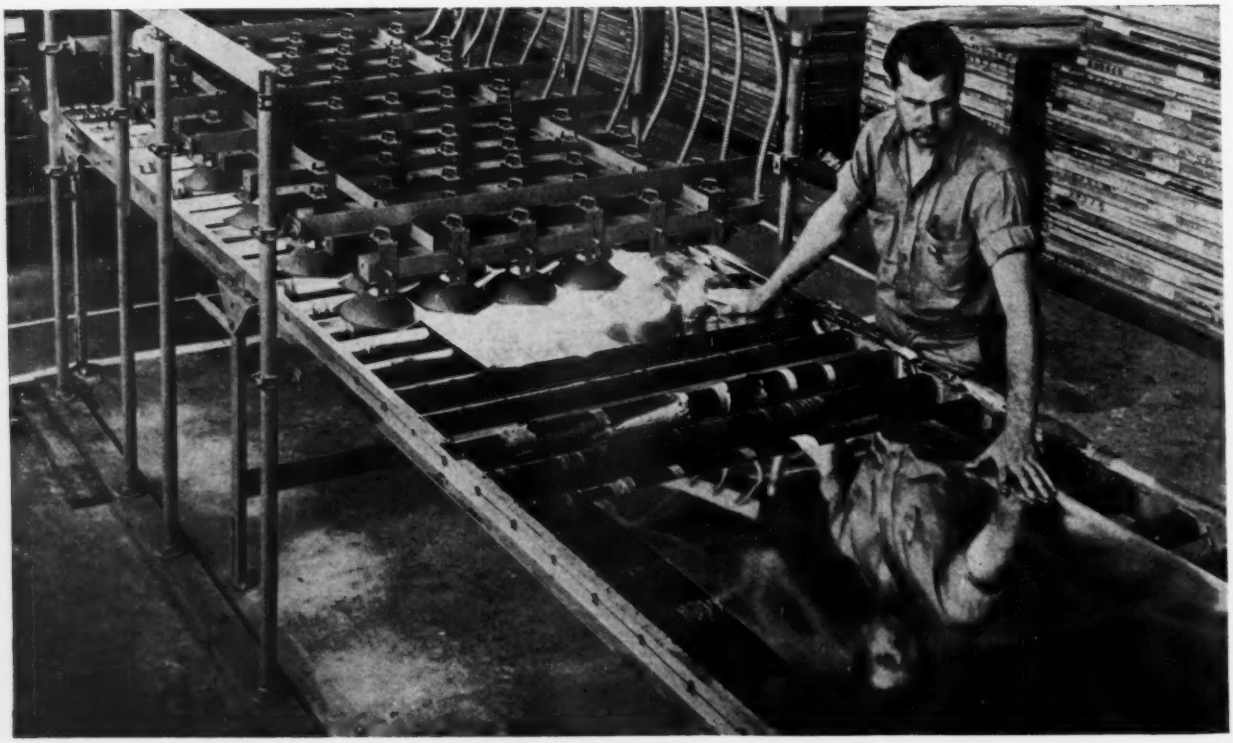
Vultee Aircraft also use practically the same methods and equipment for their baking and drying operations. Vultee officials say that near infra-red greatly reduces drying and handling time, produces better results and brings about increased volume of production.

Jacobs Aircraft Engine Co. was another manufacturer connected with the aircraft industry that was retooling and finding new processes during the "Golden Months." They are producers of airplane engines and have so successfully used the near infra-red process for baking paint on engine parts, that they have installed additional equipment in departments for other paint baking operations.

At the time of their original installation of infra-red, the enamel on cylinders required 8 hours to dry. That was on dry days; on rainy days it took 15 hours. Now, the cylinders get three composite coats of primer and finish black, are hung on conveyor hooks, and proceed through the radiant tunnel to be completely dried in about 5 minutes, regardless of weather. Shortly after emerging from the baking tunnel, the engine parts are cooled down enough to permit further assembly. Small push rod tubes are also being finished by infra-red.

Air-Cooled Motor Corp., builders of 65, 85, 90, 120, and 130 HP motors for small civil aeronautics training planes, have been using the near infra-red process for more than a year. The process is used for many production and finishing operations. The equipment is used to dry the motors after they are steam-cleaned; to bake the finish coats of paint; to expand pistons to allow a light shrink fit on the piston pins and to expand the blocks on the rocker-arm support. Here, again, the extreme flexibility of the process equipment is demonstrated.

• Aluminum sheets being brought up to proper temperature by infra-red prior to getting protective coating of paint from rollers. Paint quickly dried by another bank of equipment.



CONVENTION CALENDAR

Sept. 4—**Pacific Coast Gas Assn.,** (Business Conference), San Francisco.

Sept. 9-11 — **American Institute of Electrical Engineers,** Vancouver, B. C.

Sept. 11-12 — **California Concrete Pipe Mfrs. Assn.,** San Jose, Calif.

Sept. 11-17—**American Chemical Society,** Statler Hotel, Buffalo, N.Y.

Sept. 14-16—**Life Insurance Advertisers Assn.,** Edgewater Beach Hotel, Chicago, Ill.

Sept. 15-17—**Roadmasters and Maintenance of Way Assn. of America,** Sherman Hotel, Chicago, Ill.

Sept. 16-18—**American Fisheries Society,** New Orleans, La.

Sept. 16-18—**National Petroleum Association,** Traymore Hotel, Atlantic City, N.J.

Sept. 21-22 — **Insurance Advertising Conference,** New Ocean House, Swampscott, Mass.

Sept. 21-22-23-24—**The 44th Annual (War) Conference of the League of California Cities,** Biltmore Hotel, Los Angeles, Calif.

Sept. 25—**Shipowners Association of the Pacific Coast,** (Business Conference, San Francisco.

Sept. 27-Oct. 1—**American Bankers Assn.,** Detroit, Mich.

Sept. 29-30-Oct. 1-2—**American Institute of Steel Construction,** Broadmoor Hotel, Colorado Springs, Colo.

Oct. 5-9—**National Restaurant Assn.,** National Restaurant Mart, Chicago, Illinois.

Oct. 7-9 — **American Oil Chemists Society,** Drake Hotel, Chicago, Ill.

Oct. 8-9—**American Short Line Railroad Assn.,** Atlanta-Biltmore Hotel, Atlanta, Georgia.

Oct. 10-17 — **National Dairy Assn.,** Memphis, Tenn.

Oct. 12—**American Welding Society,** Book-Cadillac Hotel, Detroit, Mich.

Oct. 12-16 — **24th National Metal Congress and Exposition,** Cleveland, Ohio.

Oct. 12-16 — **American Society for Metals,** Statler Hotel, Detroit, Mich.

Oct. 14-17 — **Pacific Logging Congress,** Multnomah Hotel, Portland, Oregon.

Oct. 19-22 — **American Hardware Mfrs. Assn.,** Palmer House, Chicago, Ill.

Oct. 19-23—**The Wire Association,** Detroit - Leland Hotel, Detroit, Mich.

Oct. 20-22—**American Railway Bridge and Building Assn.,** Hotel Sherman, Chicago, Ill.

Oct. 25-29 — **National Lubricating Grease Institute,** Roosevelt Hotel, New Orleans, La.

Oct. 26-30—**National Electrical Mfrs. Assn.,** Waldorf-Astoria Hotel, New York, N.Y.

Oct. 27-29 — **31st National Safety Congress & Exposition,** Sherman Hotel, Chicago, Ill.

November — **Western Growers Protective Assn.,** Biltmore Hotel, Los Angeles, Calif.

Nov. 9-13—**American Petroleum Institute,** Stevens Hotel, Chicago, Ill.

Nov. 10-13—**National Association of Ice Industries,** Sherman Hotel, Chicago, Ill.

Nov. 24-29—**National Chemical Exposition,** Hotel Sherman, Chicago, Illinois.

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Women Decide It, As Usual

IT WAS a delicate situation. Management at Consolidated Aircraft huddled around the conference table. It was September, 1941. The company's first women factory had been hired. The question: How should they dress?

The question was left to the women themselves—200 of them. They voted on the issue, and uniforms won. Today thousands upon thousands of women are wearing one of three approved designs.

San Diego dealers and manufacturers were asked to submit samples. These were modeled by office workers for the uniform committee. Adopted as the first uniform was a royal-blue gabardine two-piece slack suit with pockets and button-front jacket. The suit costs approximately $5.50.

Several months later another uniform was approved: a handsome royal-blue strutter cloth which sells for approximately $8.50. The favorite of women not working on machines, the jacket of this suit has bell-shaped sleeves with a tight cuff, shirred shoulders and is form fitting.

The third uniform approved, designed for hard wear, easy laundering and modest budget, is a light blue denim jumperall priced at approximately $3.95. With short sleeves, drop seat and button front, this uniform is worn by all factory workers other than clerks.

All uniforms carry the Consolidated emblem, either on the sleeve or jacket pocket, and may be purchased at any San Diego retail store. Best of all, the women like them.

• **SKILLED AIRCRAFTER. Pausing in the backwash of propellers, Miss Anita Carlson, wearing one of the three uniforms approved by the women workers themselves, gazes skyward at a B-24 Liberator her hands helped create at Consolidated.**

Arc Welding Film Is Shown

Several hundred dinner guests of General Electric Co. had an opportunity last month in San Francisco to see the G-E 6-reel color film, "The Inside of Arc Welding," a method of training which has been estimated to speed up the welding process by nearly 25 per cent. A great many of these films have been bought by the government for helping to train welders in various branches of the war effort.

The pictures show many previously unphotographed views of the arc, the molten pool and the depth of effective weld. The films are for use on 16-mm. sound projectors. Victor Equipment Co., Pacific Coast distributors of G-E arc welding equipment, cooperated with General Electric in showing the picture.

Purchasing Chrome

Metals Reserve Company has contracted to purchase 12,500 tons of chrome ore within the next several months from California properties operated by Alwyn H. Wild, president of the United States Chrome Mines, Inc. The mines are the Sweetwater Chrome, near Morro Bay, San Luis Obispo County, and the Crow Creek Chrome, near Castella, Trinity County.

Tacoma Payrolls

Payrolls for Pierce County, Washington, in which Tacoma is located, were nearly double in April 1942, the last month for which figures are available, over the same month in 1941. The comparative figures are $7,634,148 and $4,253,892.

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WESTERN

TRADE WINDS

NEWS ABOUT THOSE WHO DISTRIBUTE AND SELL INDUSTRIAL EQUIPMENT AND MATERIALS

The Republic Supply Company of California, headquarters in Los Angeles, has taken over Larkin-Powell Company, 2328 Santa Fe Avenue, Los Angeles, which has specialized in industrial and riggers' supplies. According to Walter Duhig, general manager of Republic Supply, **Larkin-Powell Company** will continue to operate under that name.

The Republic Supply Company, organized in 1917, has devoted its primary attention to the growing petroleum industry. Continuously expanding its operations, it now has 16 outlets in California and Nevada. In 1939 the company extended its operations to the general industrial field. Acquisition of the Larkin-Powell Company is another step in completing the services that it can offer.

Among the many industrial lines that are now represented by the company are: Broderick and Bascomb, Spang-Chalfant Company, American Car and Foundry, Emsco Derrick and Equipment Company, B. F. Goodrich Rubber Company, Lunkenheimer Company, Stockham Pipe and Fitting Company, Tube-Turns, Inc., Plomb Tool Company, and American Hoist and Derrick Company.

David Larkin, Jr., one of the founders of the Larkin-Powell Company, leaves the western industrial field to join Uncle Sam's armed forces in their much larger field of activity.

* * *

Fafnir Bearing Co., 1818 So. Flower St., Los Angeles, has placed R. E. Latham in charge of general sales, and Wally Latham in charge of aircraft industry sales.

* * *

At recent dedicatory ceremonies of the enlarged Hemphill Institute of Technology, **Ralph Hemphill** announced the formation of his Research Foundation. Members of the Technical Board are: Thomas M. Shelton, chief of training at the Aero Industries Technical Institute; John F. Delmonte, research director of the Plastics Institute; Ray E. White, chief engineer of the Hemphill Institute of Technology; and Lieutenant W. H. Coffin, operations manager and flight engineer of the United Flying Schools of America.

* * *

James H. Richards, president and general manager of Fray Machine Tool Co., Glendale, Calif., announces the formation of a new manufacturing firm to be known as the **Fray Tool & Reamer Co.** and located at 456-458 West Broadway, Glendale. They will manufacture four-flute end mills. F. V. Vessey is general manager.

* * *

Enterprise Engine and Foundry Co., San Francisco, have appointed the Robt. B. Young Advertising Agency as their advertising representative.

* * *

J. A. (Jack) Corlett has been advanced to the position of Pacific district publicity representative of the **General Electric Co.,** with headquarters in San Francisco. He will be assisted in Southern California and Arizona by A. X. Schilling.

The Robert M. Taylor Co., 116 New Montgomery St., San Francisco, now represents Robbins & Meyers, Inc., manufacturers of hoists and cranes. They also represent Philadelphia Chain Block & Mfg. Co,. and Louden Machinery Co.

* * *

E. C. Buehrer Co., 562 Bryant St., San San Francisco has been appointed distributor of Buda Chore Boy half-ton industrial trucks in Northern California.

* * *

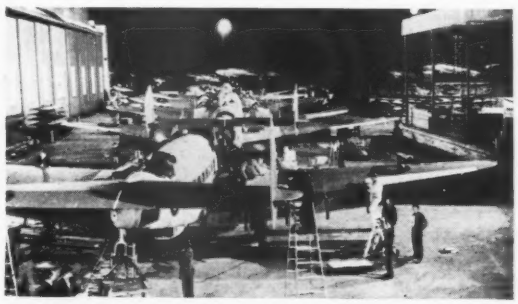
Harry H. Fishstrom, owner, **Fishstrom Staple Co.,** California-Nevada distributors for the Markwell Manufacturing Co., New York, announces that the company has moved its San Francisco headquarters to a new location at 450 Mission St. Offices also are located at 608 Sixteenth St., Oakland, and 112 East Seventh St., Los Angeles.

In addition to the Markwell staples distributed by Fishstrom, a complete line of Markwell shipping room necessities are featured, which includes tools to speed up deliveries as well as tools for opening packages; stencil brushes and paper, marking inks for metal and wood; crayons for lumber and steel, railroad and carpenter's chalk; nail pullers and crate openers.

* * *

Precision Bearings, Inc. will locate in the building of the J. W. Minder Chain & Gear Co., 417 S.W. Fifth St., Portland, Ore. Consolidation of stock and trained personnel assures better service to the company's clients.

VEGA



BUILDERS of the powerful Vega Ventura, and producers of giant 4-engined bombers, Vega Aircraft Corporation is another typical client of Security's War Loan Department. If you require prompt capital to finance expanding payrolls and increased material purchases, remember, "Security Stands for Speed." See us today.

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THE WEST ON ITS WAY

ARIZONA

SHIPPING MANGANESE—**The American Manganese Co.,** Box 655, Globe, Ariz., expects to start production immediately, shipping manganese ore to the Metals Reserve stockpile at Deming, N. M. Over 1,000 tons are on the dump, and the company hopes to be able to maintain a production rate of 50 tons daily.

SAMPLING ORE—**Kaiser Company, Inc.,** Iron and Steel Division, are sampling ore from the Pikes Peak mine near Peoria, Ariz. If the ore is found to be suitable, it will be used to feed the new steel plant being erected by the Kaiser Co. at Fontana, Calif.

ORDNANCE DEPOT—More than $2,000,000 is to be spent for the construction of an ordnance depot in the Arizona area. **J. A. Utley,** 723 East Ten Mile Road, Royal Oak, Mich. was awarded the contract by the U. S. District Engineer office, Albuquerque, N. M.

TRAINING SCHOOL—The War Department has announced the award of a negotiated lumpsum contract to **Del E. Webb,** Phoenix, Ariz., for construction in connection with an Air Force Training School at Yuma, Ariz., to cost in excess of $3,000,000.

ALUMINUM EXTRUSION PLANT—Ernest W. McFarland, Arizona Senator, has announced that a large aluminum extrusion plant will be built near Phoenix, Ariz., by the Defense Plant Corp. for the **Aluminum Co. of America.**

MAGNETIC SEPARATION PLANT—**General Dry Battery Co.,** Cleveland, Ohio, is planning construction of a new magnetic separation plant for manganese ore in Del Puerto Canyon, Stanislaus County, Calif., on property owned by the Charles Zacharias Co. Cost is estimated at $100,000.

ELECTRIC DISTRIBUTION SYSTEM—**Palmer & Berger Construction Co.,** Phoenix, Ariz., has been awarded a contract by the U. S. Regional Engineer for the construction of an electric distribution system at an air force flexible gunnery school in Arizona.

CALIFORNIA

BREWERY PURCHASE—**The Rainier Brewing Co.** of San Francisco has purchased the Vernon Brewing Co. plant at 5151 Santa Fe Ave. in Los Angeles for approximately $300,000.

OVERALL PLANT—**The Levi-Strauss Co.** will establish an overall plant in San Jose, Calif., to be located at 19 South Market St. Approximately 100 men and women will be employed.

SUGAR SEASON—Operations of the Betteravia, Calif., refinery of the **Union Sugar Co.** started early in August. The company expects the longest run and the biggest output in its 44-year history. It has 16,000 acres under contract and expects to process 260,000 tons of beets to net a return of 800,000 sacks of sugar of 100 pounds each.

DWELLING UNITS—**Leibert & Trobock, C. W. Caletti and Grant Leibert,** associated contractors, Albert Bldg., San Rafael, Calif., have awarded seven sub-contracts on the 800 demountable dwelling units and 700 war apartment units they now are constructing at Waldo, Calif., for the Housing Authority of Marin County.

STYRENE PLANT—Stone & Webster, 601 West Fifth St., Los Angeles, are preparing plans for the **Dow Chemical Co.** for the construction of a styrene plant. The styrene is to be used for the production of synthetic rubber.

PERSONNEL SHELTERS—The U. S. Engineers Office has awarded a contract to **F. L. and George A. Froley,** 152 So. La Peer Drive, Beverly Hills, Calif., for the construction of personnel shelters at an aircraft manufacturing plant in Southern California.

FIRE PROTECTION—A fire protection system is to be built in the San Francisco Bay area by **Conner & Brant,** 1222 Whipple Ave., Redwood City, Calif. The U. S. Army Engineers office in San Francisco made the award.

TRAILER SITES—The Housing Authority of the **City of Richmond** has selected a camp at Meade and 51st streets in the Harbor Blvd. tract which will accommodate 650 trailers; and another alongside Shipyard No. 2 between South 18th and 23rd streets. Plans for necessary buildings, sanitation facilities and utilities are being prepared.

OLIVE OIL PLANT—A new olive oil plant will open in Fresno, Calif. about October 1, according to the **Cooperative Olive Products Assn.** Martin Morici is president of the new concern. Approximately $4,000 will be spent in remodeling the building, and about $20,000 worth of equipment is to be installed.

CANNERY AND WAREHOUSE—**The Oxnard Canners, Inc.,** Port Hueneme, Calif., will build a two-story frame warehouse and cannery building at Monterey, Calif., at a cost of $70,000.

CRIBBING PLANT—**The Pacific Bridge Co.,** 333 Kearny St., San Francisco, will construct a plant in Redwood City, Calif., to build cribbings to be floated to Hunters Point, south of San Francisco, for improvement of port wharf and installation of a spur track.

JIB CRANES—**Pennsylvania Iron & Steel Co.,** Los Angeles, has been awarded a $403,987 contract by the Bureau of Yards & Docks for jib cranes for the Naval Operating Base in San Diego, Calif.

MANUFACTURING PLANT—A two-story manufacturing plant is under construction for the **Matson Navigation Co.** at Fremont and Brannan streets in San Francisco, Calif.

VANADIUM CONCENTRATES—**The Wilzona Development Corp.,** Los Angeles, Calif., are completing their plant for the treatment of vanadium concentrates. The first unit will produce about 2,000 pounds of V O daily.

NEW LOCATION — Cliff Driskell, head of the Hanford Chamber of Commerce research committee, found a new location for the **McFar Company,** manufacturers of lathes and machine tools, and retained a $240,000 yearly payroll for Hanford, Calif.

REDWOOD TIMBER—**Stone Logging & Contracting Co.,** Tillamook, Ore., has purchased 200,000,000 feet of redwood timber from the Walter P. Frick Estate, Oakland, Calif., to furnish logs for Juan Creek Lumber Co., Westport, Calif.

WATER TREATMENT—**Kaiser Co., Inc.,** Latham Square Bldg., Oakland, Calif., have awarded a contract for the construction of a water treatment plant at their Fontana steel mill to MacIsaac & Menke, Los Angeles.

SHOP BUILDING—A one-story, one-room shop building is under construction for the **American Forge Co.** at 739 Ashby Ave., in Alameda, Calif.

(Continued on page 29)

CALIFORNIA—*(Cont'd)*

PROTECTIVE CONCEALMENT—**Pacific Crane & Rigging, Inc.,** 6800 So. Alameda St., Los Angeles, Calif., has been awarded a $100,000 contract for protective concealment at an aircraft manufacturing plant in Southern California, by U. S. Engineers.

AIR BASE BUILDINGS—**R. J. Daum,** 6803 West Blvd., Inglewood, Calif., has been awarded a supplemental agreement for more than $100,000 by the U. S. Engineers for construction of a maintenance and inspection hangar and boiler house at an air base in Santa Barbara County, Calif.

PREPARING PLANS—**The Austin Co.,** Oakland, Calif., is preparing plans for the Par Soap Co. for the reconstruction of its two-story plant at 767 85th Ave., Oakland, which was destroyed by fire.

DIRIGIBLE MANUFACTURE—**The Martin-Parry Corp.** has been issued permission to manufacture dirigibles in Los Angeles County.

CANNERY, PIER—**C. J. and Margaret Paul** have been granted a 20-year franchise for a wharf and cannery to be built on city property at the foot of C Street in Crescent City, Calif.

WIRE PLANT—**The Essex Wire Corp.** has acquired land and buildings in Anaheim, Calif., for the establishment of a manufacturing plant to serve the Pacific Coast area. The total investment will be approximately $500,000.

FOUNDRY BUILDING—The Navy Department has awarded a contract to **Carl N. Swenson Co.,** 355 Stockton Ave., San Jose, Calif., for the construction of a foundry building in the East Bay area, Calif., to be operated by the General Metals Corp., San Leandro, Calif.

FURNACE STOVES—Three hot blast furnace stoves are being constructed at Fontana for the **Kaiser Co., Inc.** by Wm. M. Bailey Co., Magee Bldg., Pittsburgh, Penn., at an estimated cost of $360,000.

CATWALKS AND LADDERS—**H. M. Keller Co.,** 4604 Hollywood Blvd., Los Angeles, has been awarded a contract by the U. S. District Engineer for construction of catwalks and ladders at an aircraft manufacturing plant in Southern California.

FLUORESCENT LIGHTS—**The House of Light,** 734 So. Friends Ave., Whittier, Calif., was awarded a contract by the U. S. District Engineer for the installation of fluorescent lights in "leantos" of five hangars at an airfield in Southern California.

COLD STORAGE—A contract for a cold storage addition to existing commissary building at a camp in San Diego, Calif., has been awarded to **Anderson & Johnson,** 4745 Hawley Blvd., San Diego, Calif., by the U. S. District Engineer office.

SHATTERPROOF TREATMENT—**W. L. Martin,** 6206 So. Wilton Place, Los Angeles, Calif., submitted low bid to the U. S. Regional Engineer for shatterproof treatment of skylights at an aircraft manufacturing plant in Southern California.

CANNERY EXPANSION—**The Hickmott Canning Co.** in Antioch, Calif., announce that they will expand their waterfront plant. An additional 125 workers will be required to handle the increased production. Tomatoes will be canned until the first of October, according to company officials.

ADMINISTRATION BUILDING—**The Bethlehem Steel Co.** is constructing a three-story wood frame administration building at 2308 Webster Street, Alameda, Calif.

STORAGE TANKS—**Edward R. Siple,** 2545 San Fernando Road, Los Angeles, submitted low bid to U. S. District Engineers for the construction of two 12,000-gallon storage tanks at a bombing range in Southern California.

(Continued on Page 30)

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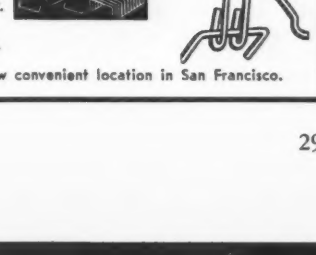

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NOTE: We've moved to a new convenient location in San Francisco.

CALIFORNIA—*(Cont'd)*

FREIGHT SHEDS—**The Western Pacific Railroad Co.,** San Francisco, are building additions to their freight sheds in Sacramento, Calif.

COLORADO

MOLYBDENUM MINE—**The Defense Plant Corp.** has purchased a Urad molybdenum mine near Empire, Colo., from the Vanadium Corp. of America for $110,000. $250,000 has been set aside for the development of the holdings.

DEPOT EXPANSION—**The War Department** has authorized the expansion of a depot in Pueblo County, Colo., which will cost more than $5,000,000. The District Office of the Corps of Engineers, Denver, Colo., will supervise construction.

CHLORINE PLANT — **Kershaw, Swinerton & Walburg Construction Co.,** Denver, Colo., has been awarded a contract by the War Department for general construction of a chlorine plant at the Rocky Mountain Arsenal; and H. K. Ferguson Co., Cleveland, Ohio, for construction of a chlorine manufacturing plant at the Chemical Welfare Arsenal near Denver.

FRAME BUILDINGS—**Stull Construction Co.,** Glenwood Springs, Colo., are to build temporary frame buildings at a military site in Eagle County, Colo. The award was made by the U. S. War Department.

IDAHO

MOBILE GRANARIES—**The Potlatch Forests, Inc.,** Lewiston, Idaho mill is producing a number of mobile granaries designed by R. T. Bowling, chief engineer. The granary has a 1280-bushel capacity, with lock-type roof and glued lumber walls, and may be moved easily.

MONTANA

PILOT PLANT—A $350,000 pilot plant, with an output of 500 pounds of metallic zinc daily, is scheduled tentatively for Montana, according to **Oscar Baarson,** state director of the war production board.

STORAGE BUILDING — **The Victory Construction Co.,** Great Falls, Mont., will construct a segregated storage building at the Army air base for the U. S. Army Engineers, Fort Peck, Mont.

(Coontinued on Page 31)

OPPORTUNITY SECTION . . .

Priorities regulations have made it practically impossible to secure new machinery for industrial operations unless a plant is doing 100 per cent work on war projects. Even then, long delays are in prospect. The government is urging full use of existing machinery. Listed here are "machinery opportunities" immediately available here on the Pacific Coast. Recently, used machine tools were made subject to priorities, but this does not apply to other classifications of machinery.

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1—30 HP 4 Speed Constant HP, 220 Volt, 3 phase, 60 cycle, Type CS Westinghouse, sealed sleeve Horizontal motor
SPEEDS—1180—875—590—440 RPM
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1—Pair Westinghouse slide rails

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1—Bulletin 9402 H 15 C
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Cutler Hamer Reversing 4 speed pole changer

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MOTORS

1—260 H.P. Synchronous G.E. 225 RPM, 2200 volts, 210 KVA.
2—250 H.P. Westinghouse, Type CS, 290 RPM, 2200 volts.
1—200 H.P. G.E. Type I, 600 RPM, 440 volts.
1—200 H.P., G.E. 1800 RPM, 440 volt motor.
1—150 H.P. Westinghouse, Type CS, 1800 RPM, 440 volts.
1—150 H.P. Westinghouse, Type CS, 900 RPM, 2200 volts.
1—150 H.P. G.E. Type I, 720 RPM, 440 volts.
1—100 H.P., Slip Ring, G.E., 720 RPM, 440 volts.
1—75 H.P. G.E. Type KT, 1800 RPM, 440 volts.
1—62½-Ft. 25½-inch Double Leather Belt.
1—60 H.P. G.E. Type I, 1800 RPM, 440 volts.
1— 50 H.P. Vertical Fairbanks Morse, 1200 RPM, 220 volts, solid shaft.
1—35 H.P. Crocker Wheeler, 1200 RPM, 220 volts.
1—10 to 30 H.P. Slip Ring, Westinghouse, Type MW, 860 RPM, 440 volts.

GENERATORS, BLOWERS, WATER PUMPS

1—1500 Watt, Direct Current, 110 volt, Kohler automatic light plant.
1—600 Amp, 7500 volt, Westinghouse Type F3 oil circuit breaker.
1—300 H.P. Triumph Water Wheel with governor, 50 ft. head.
1—No. 70 ILG Blower, 17,430 CFM, direct to 6 H.P. 340 RPM, 3 phase motor.
2— 75 KVA Transformers, G.E. Type H, 6600 to 120/240/480 volts, 60 cycle.
1—60 H.P. Byron Jackson Turbine pump, 1200 GPM at 140 ft. head.
1— 50 H.P. Single Drum Mine Hoist.
1—37½ KW, Westinghouse DC Generator, 550 volts, 900 RPM.
1— 20-inch Krogh Split Case Pump, 11,000 GPM at 26-ft. head.
1—10 K.W. Direct Current, 110 volt Kohler automatic light plant.

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Used and Rebuilt Oil-Cooled Transformers in Stock

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4—5 K. V. A. Westinghouse
3—10 K. V. A. General Electric

Single Phase, 50 or 60 Cycle 2200 to 440/220 Volts

1—7½ K. V. A. Westinghouse
3—10 K. V. A. General Electric

Single Phase, 50 or 60 Cycle 440 to 220/110 Volts

4—1½ K. V. A. Westinghouse
8—3 K. V. A. Westinghouse
12—5 K. V. A. Westinghouse
4—7½ K. V. A. Westinghouse
3—10 K. V. A. Westinghouse
1—37½ K. V. A. Westinghouse

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NEVADA

CARBONATE ZINC ORE—**The Defense Plant Corp.** has allocated $341,000 for construction of a customs mill for treatment of carbonate zinc ore at Jean, Nev. The plant will be operated by the Western Metals Co. and will have a capacity of 48,000 tons annually.

RESTAURANT CONCESSION—**Basic Magnesium, Inc.,** in Nevada, has a restaurant concession that will seat 2,500 at one time. The painting job, now in progress, is estimated to require 200 carloads of paint.

OREGON

CHROME PLANT—**The Ritter Products Corp.,** Rochester, New York, is working with Earl K. Nixon, director of the State Department of Geology and Mineral Industries, Portland, Ore., on the recovery of chromite from Oregon beach sands. A pilot plant has been built at Bandon, Ore., in order to work out proper concentration methods for the various properties in the area.

LEASE PROPERTY—**The Dean Co.** of Chicago has taken a lease on the former Beaver State Motor Works plant at Gresham, Ore., and will have the plant in operation about the first of September.

BLIMP BASE—**The U. S. Navy Bureau of Yards & Docks** has announced the amount of a cost-plus contract as $5,213,400 for construction of a naval blimp base on Tillamook Bay, Ore. area. Sound Construction & Engineering Co. was awarded the contract.

OXYGEN PLANT—A contract for the construction of an oxygen plant at the Kaiser Swan Island shipyard, Portland, Ore., has been awarded to **Wegman & Son,** Board of Trade Building.

STEEL MILL—The War Production Board and its plant site board have given final approval to construction of a plant by the **Oregon Electric Steel Rolling Mill, Inc.,** in Portland, Ore. The mill will produce steel from scrap iron, according to Morris Schnitzer, president.

STEAM GENERATORS—**The Prineville Machine & Supply Co.** has received Prineville's (Ore.) first war industry subcontract for the building of steam generators for use in cargo vessels.

UTAH

BRICK FACTORY—Work already is under way for the construction of Lehi, Utah's newest war industry—a $250,000 brick manufacturing plant to supply silica brick for the Geneva and Ironton plants of the **Columbia Steel Co.** The plant will be operated by the E. M. Smith Co. and is being built by W. E. Ryberg-Strong and Grant Co.

ABOVE-GROUND MAGAZINES — **Intermountain Construction Co.,** South Salt Lake City, Utah, has been awarded a contract by the U. S. District Engineer Office for construction of 12 above-ground magazines at an ordnance depot in the Utah area.

AIR BASE BUILDINGS — **Harrison & Dorman, Inc.,** 13 South and 4 West, Salt Lake City, Utah, has been awarded a contract for approximately $100,000 by the U. S. District Engineers office for construction of celestial navigation and bomb trainer buildings at an air base in the Utah area.

NAVAL DEPOT—**The U. S. Navy** has awarded contracts for construction of a naval depot near Clearfield, Utah, to: Winston Bros. Co., C. F. Haglin & Sons, Inc., Missouri Valley Bridge & Iron Co., and Sollitt Construction Co., Inc. Estimated cost is $35,000,000.

DEPOT EXPANSION—**The War Department** has authorized expansion of a depot in Tooele County, Utah, which will cost more than $5,000,000. The Salt Lake City District Office of the Corps of Engineers will supervise construction.

WASHINGTON

DOUBLE PIER—**L. R. Durkee,** sub-regional director of the Federal Works Agency, Seattle, Wash., has announced presidential approval of the construction of a double pier at the foot of Connecticut Street, Seattle. The estimated cost is $2,800,000.

NEW SHIPYARD—Construction of a shipyard for **Prefabricated Ships, Inc.,** in Olympia, Wash., is under way. The company holds a "negotiated contract for three covered barges for army transport service, according to President William Henderson.

EGG AND POULTRY—**The Washington Cooperative Egg & Poultry Assn.** has purchased the Ellensburg Milling Co. property, in Ellensburg, Wash., for a branch station.

SPRINKLER SYSTEM—**Viking Automatic Sprinkler Co.,** 1120 Eighth So., Seattle, will construct an automatic sprinkler system and valve house in Spokane County, Wash., at a cost of less than $50,000. U. S. District Engineers awarded the contract.

HOUSING PROJECT—**A. W. Johnson Co., Inc. and Goetz & Brennan,** Seattle, Wash., have been awarded a contract by the War Department for construction of housing and utilities in the vicinity of Seattle. The cost will be less than $500,000.

UTILITY SHOPS—**Sam Bergersen** and **Wick & Dahlgren,** 1367-30th So., Seattle, have been awarded a $50,000 to $100,000 contract for the construction of post utility shops and yards at a military post in the Pacific Northwest by U. S. Army Engineers.

REMODEL DAIRY—**The Dairy Cooperative Association** in Vancouver, Wash., are remodeling their present plant at a cost of $4500. In addition, E. J. Keller, manager of the Mayflower milk distributing plant, reports that the overhauled building will house a new $5500 soaker-type bottle washer and conveyor equipment valued at $1000.

SEA-GOING TUGS—**The Grays Harbor Shipbuilding Co.** has been awarded a contract for $2,400,400 worth of sea-going tugs, and work starts immediately at the firm's Aberdeen yard, according to President Albert Schafer.

STEAM GENERATION—The U. S. Army Engineers Office, Seattle, Wash., have awarded a contract for installation of steam generating equipment to **Bumstead-Woolford,** Seattle, Wash., in an amount between $50,000 and $100,000.

MAINTENANCE BUILDINGS—Low bid of less than $100,000 for the construction of quartermaster warehouse and maintenance buildings at an air depot in Utah won the contract for **Wade Bros.,** 457 Fifteenth St., Ogden, Utah, from the U. S. District Engineer office.

RADIO RECEIVER—**The Norge Construction Co.,** 5008 Admiral Way, Seattle, Wash., will construct a radio receiver building at a military site, at a cost of from $100,000 to $500,000. Major E. J. Riley, U. S. Army Engineers, Seattle, awarded the contract.

PREFABRICATED HOUSES—**The Lincoln Creek Lumber Co.,** Centralia, Wash., has received a contract from the War Department for 35 prefabricated houses, 16 by 16 feet. Robert H. Thompson is president of the company.

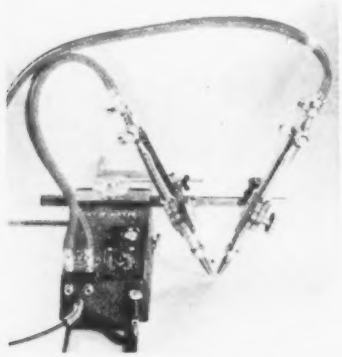
TRAINING BUILDING—A training building is to be constructed at a military post in Spokane County, Wash., by **Hawkins & Armstrong,** at an approximate cost of $100,000 to $500,000. U. S. Army Engineers awarded the contract.

HOUSING FACILITIES—**A. G. Homann,** 1112 No. Franklin St., Olympia, Wash., will build housing facilities in Pierce County. The $50,000 to $100,000 contract was awarded by the Seattle U. S. Army Engineers.

THE SHOWCASE

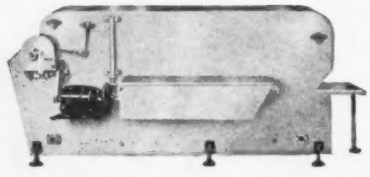
• CUTTING MACHINE—A new automatic, light weight flame cutting machine which has been introduced recently is said to possess many advantages.

While very sturdily built, it is comparatively light and all operating mechanisms are easily accessible. The machine itself can be employed both for circle cutting and for straight line cutting, and can be equipped with one or two cutting torches easily adjustable to any desired angle. This feature is of particular value for plate edge preparation. The machine itself can be put into



free wheeling to permit ease of adjustment and an instructor and an indicator assure accurate resetting of the torch to the desired and proper location.

A rheostat control switch offers flexible speed control and a speed selector with four positions makes machine travel speed changes instant. In this manner the machine can be made to travel at speeds anywhere from 2 to 6 inches per minute either forward or in reverse. A small control switch reverses the machine instantly. The machine has a circle cutting range from 2 inches upward. Special circle thicknesses are obtainable and every needed adjustment of torch position, torch angle, forward or reverse speeds is accomplished by properly located wheels or switches. Victor Equipment Co., 844 Folsom St., San Francisco, Calif.

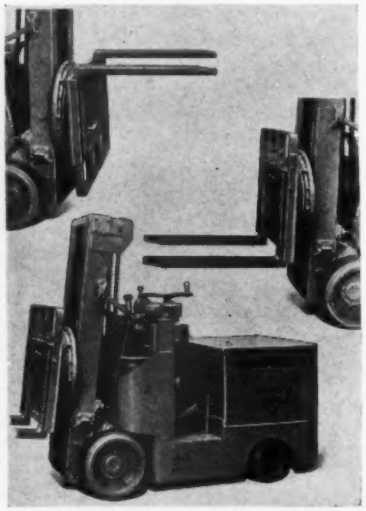


• METAL PARTS WASHER—Soaks, washes and dries metal parts, either machined, finished or rough. Especially designed for the cleaning of war production small parts, shells, cartridges, munition parts. The parts are subjected first to a long dormant soaking in very hot light alkali solution water which loosens and removes all the dirt and chips, followed by a powerful hydro washing. There is sufficient time to allow the clean parts to dry thoroughly before reaching the unloading platform. No adjustments need be made to clean a large variety of items. Sturdy-Built Equipment Corp., 1441 South 65th St., Milwaukee Wisc.

Do a BETTER JOB with NEW EQUIPMENT

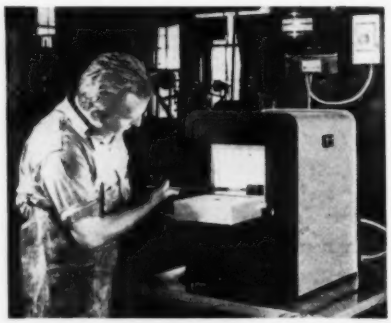
For more complete information concerning any of the products listed in these columns, write to Western Industry, 503 Market Street, San Francisco, and we shall see that the material is forwarded to you. Descriptions of the products and claims made are those of the manufacturer.

• CENTER CONTROL TRUCK—Supplied with forks on a rotating base capable of making a complete revolution. Should the work call for only a partial revolution,



the base can be provided with stops to limit the swing to any angle up to 180 degrees. At top position, the forks carry either suspended or supported loads. When locked into place at the bottom, they handle pallets or low skids with no adjustment. The truck is electric-powered, with front wheel drive and rear wheel steer. Handles up to 4,000 pounds, and travels up to five miles per hour with full load. Travel brake is foot-operated, and when operator steps from position on truck, power is shut off and brake applied automatically. The Elwell-Parker Electric Co., 4175 St. Clair Ave., Cleveland, Ohio.

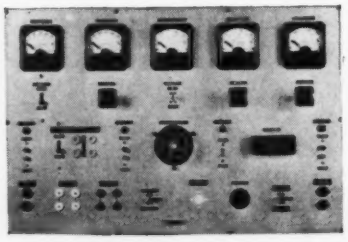
• HEAT TREATING FURNACE—A small electric muffle furnace for economical and fast heat treating of small parts, drawing or tempering small lot small parts, normalizing or annealing small parts, preheating for subsquent high-speed hardening and for emergency repair orders where one or two small parts must be heat treated in a short time. The furnace is simple in



structure, the outer shell being of heavy gauge sheet steel interposed between cast iron and frames secured by through rods. Elements are of the embedded type which afford protection to the element wire from atmospheric attack. Four inter-locking rectangular elements form the interior of the chamber. Cooley Electric Manufacturing Co., 215 So. Senate Ave., Indianapolis, Ind.

• PAINT REMOVER—For quick, thorough and safe removal of enamel, varnish, lacquer, zinc chromate primers. Noninflammable; wax-free; requires no after cleaning; will not injure aluminum, or other reactive metals, or fabrics; and has no excessive vapors. Known as Turco Stripper L-595. Literature available. Turco Products, Inc., 6135 So. Central Ave., Los Angeles, Calif.

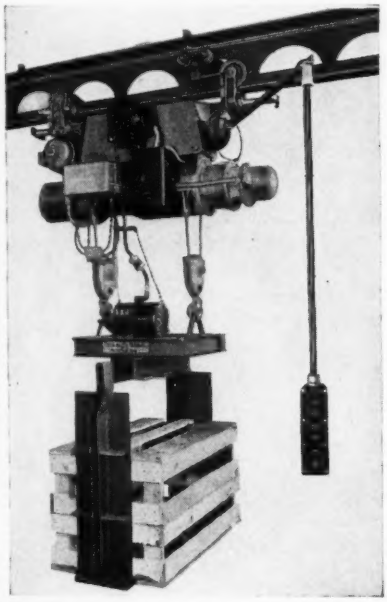
• TESTING PANELS—A speedy and efficient method for production testing of all types of electrical equipment. The panels provide the greatest flexibility of electrical connections necessary in research and



development laboratories. Simple and convenient to operate and built for heavy duty service, each panel is designed to meet individual requirements. The Standard Electric Time Co., Springfield, Mass.

• MAGNI-FOCUSER EYE-SHADE—A scientifically designed optical device which definitely aids craftsmen to see and work better with more accuracy, according to the manufacturer. The headpiece is indestructible, the eye shade is equipped with lenses ground from the best optical glass, and the lenses are dually mounted in the headpiece to bring the object under examination into needle-point sharpness at a distance of approximately ten inches from the forehead. Literature available. N. L. Huebsch, 81 Yale St., East Williston, N.Y.

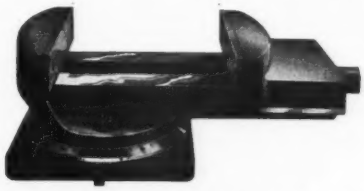
• CRATE GRAB AND CARRIER—Especially designed for handling crates and boxes in and out of storage, or from one elevation to another. Enables quick stacking or removal of crates at a great height with safety, and makes possible faster handling. The unit is completely motorized with all operations conveniently controlled by the six buttons of the push-button station. The arms of the grab are extended and retracted by means of geared slide bars that are driven by the motor



mounted on top of the grab. A double-hook cable type electric hoist elevates and lowers the grab with very little swing, making it easy to spot it as desired. A quick-acting electric brake stops and holds the load wherever desired. The Cleveland Crane & Engineering Co., Wickliffe, O.

• TRANSPARENT COATING—Reduces rejects due to rust, surface scratches, shop wearing, grease and dirt on metal and ceramic surfaces. Known as Protektol, visual inspection of coated parts are permitted. Particularly applicable to highly polished surfaces. In application, the liquid is sprayed, brushed, sipped or roller coated; air-dried to leave flexible glass-clear coating. When sprayed to a thickness of one mil, one gallon will cover approximately 250 square feet; drying time, six to eight minutes. Ault & Wiborg Corp., Cinncinnati, Ohio.

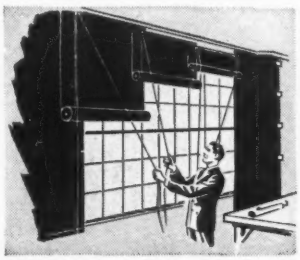
• VICTORY VISES—Made in three sizes, 7, 10, and 13 inch jaw capacity, these vises include extra clearance for full freedom in swiveling over base clamps; broad heavy bases for maximum stability; complete graduation around entire dial for easy reading and fast set up; oversize bearing area on swivel base for extra strength and pre-



cision; a removable screw nut of hardened steel; and hardened and ground tool steel jaw plates. An added feature is a clean-out hold below the stationary jaw for quick removal of chips and waste from around the screw. David J. Ross Co., 118 Ross Park, Benton Harbor, Mich.

• TIN-BASE SUBSTITUTE—Two new lead-base bearing metals, known as Pyramid and Defender, have been developed as substitutes for tin-base babbits. Pyramid metal is well suited to applications where bearing must withstand heavy sustained pressures, such as are found in marine reciprocating engines, water turbines, paper mill calendar stacks and rolling mill machinery. Defender Metal stands shocks without cracking and is well suited for use in internal combustion engines, trap rock crushers and sifter machinery, Magnolia Metal Co., 120 Bayway, Elizabeth, New Jersey.

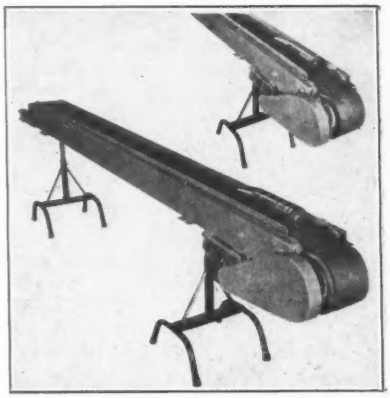
• BLACKOUT BLINDS—A cord type blind which raises and lowers easily, and by a practical method of overlapping is adaptable for windows of any size or number in factories, hospitals and public



buildings. The material is heavy crepe fibre, light-proof, will not crack, and is flame-proof. Clopay, 1207 Clopay Squire, Cincinnati, Ohio.

• SAFTOID WHEELS—A substitute for the hard rubber feed wheels used on centerless grinders. According to the manufacturer, these wheels cost less and last longer than the same wheels made of rubber. Safety Grinding Wheel & Machine Co., Springfield, Ohio.

• SHELL VEYOR—Facilitates the handling of artillery shells in munition plants. A portable belt-type conveyor with a six-inch canvas belt that moves over a V-channel board assembled in a structural frame.



The belt on which the shells are conveyed passes over concave rollers located at either end of the conveyor frame, and is powered by a one-third horsepower motor. The Rapids-Standard Co., Grand Rapids, Mich.

• DEEPFREEZE—Contraction in compound fitting of metals parts is one application of this unit known as the Santocel. This unit facilitates slide fits in assembly operation, relieves strain and possible fractures. Tests have indicated that sub-zero tempering and stabilization of high speed tool steel will produce a combination of hardening, strength and ductility unobtainable by ordinary hardening or tempering. Also can be used for shrinking steel sleeve type bearings used in cast-iron fixture housing for supporting and guiding precision boring spindles for airplane boring machines. Motor Products Corp., North Chicago, Ill.

YOURS FOR THE ASKING

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1108

• MAINTENANCE EQUIPMENT — Folder deals with the problem of keeping floors clean without taking time and manpower from crowded production schedules. It shows how two men, operating together with a scrubbing machine and vacuum pick-up, cover ground quickly and leave clean floors that are dry. The machines are illustrated and described, and various cleaning uses pointed out. Hild Floor Machine Co., 1313 West Randolph St., Chicago, Ill.

1109

• STRAINERS—Bulletin 400 stresses the importance of protecting pumps through the use of strainers in the intake lines and illustrates with cross-sectional views and describes the operation of four types of strainers. Specifications show the four types of strainers are available in a choice of three standard constructions—all iron, bronze-fitted and all bronze. Blackmer Pump Co., Grand Rapids, Mich.

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1110

• AIR RAID BLANKET — A heavy, strong blanket-like material made of densely felted cattle hair with a center reinforcement of wire mesh provides combined blackout with glass splinter protection. "Blackout, Air Raid Damage and Glass Splinter Protection for Industrial Plants" is the title of a booklet illustrating casualties resulting from flying glass, and showing how they can be prevented by the use of the blanket. Suggested installation methods are included. Clinton Carpet Co., Merchandise Mart, Chicago, Ill.

1111

• SCREW PRODUCTS—A 96-page catalog giving complete coverage of the screw products industry. Sectionalized for easy reference with one complete and twelve sectional indexes. Contains list prices, technical data, weights and dimensions of various products. Manufacturers Screw Products, 216 West Hubbard St., Chicago, Ill.

1112

• CONVEYOR PULLEY—Recent development in pulley design offers important advantages to users of belt conveyors. Made with tight ends, no spilled materials or dust or water can accumulate inside the pulley. Rolled steel is used for the pulley which is light in weight and practically unbreakable. Removable, interchangeable hubs assure quick, easy mounting. Bulletin CP-42 features both the solid and split conveyor pulleys, and contains complete data needed to specify conveyor pulleys. The American Pulley Co., 4200 Wissahickon Ave., Philadelphia, Penn.

1113

• MEASURING AND CONTROL INSTRUMENTS—Bulletin Z6000 is a condensed listing of a complete line of measuring and control instruments. Describes and illustrates unit construction of temperature controllers and explains the "electronic principle" for effecting control without contact between the measuring and control functions of the instrument. Remote controllers, combustion safeguard equipment and other instruments also are covered. Wheelco Instruments Co., Harrison and Peoria Sts., Chicago, Ill.

1114

• WOOD SASH—Engineered by an internationally known architectural firm, these National projected wood sash are offered in 18 standard basic units, each basic unit an opening in itself. May be installed individually, or the various units combined to meet almost every installation requirement in industrial and commercial buildings. Manual A contains complete information with specifications and detail drawings for both in-projecting and out-projecting types, various combinations of units and other information. National Door Manufacturers Assn., Inc., 322 So. Michigan Ave., Chicago, Ill.

1115

• LIGHTING EQUIPMENT — Catalog 42 contains 88 pages of specifications, foot-candle data, coefficients of utilization charts, equipment spacing and all other information essential for ordering and installing fluorescent and incandescent lighting. Curtis Lighting, Inc., 6135 West 65th St., Chicago, Ill.

1116

• RADIO INSTRUMENTS — Bulletin 126 describes new instruments for laboratory and production use. Typical is a sensitive electronic limit bridge for precision resistance testing and highly versatile multitester for quick and accurate production line tests. This new line is designed for speed, accuracy and long service, according to the manufacturer, and each instrument is conveniently equipped to do its specific job faster and better. Radio City Products Co., Inc., 127 West 26th St., New York, N.Y.

1117

• HOMO TEMPERING—Catalog T-625 for anyone concerned with the problem of warspeed tempering, annealing or stress-relieving of big loads; of expediting work through the heat-treat; yet obtaining such highly uniform physicals that rejects practically are eliminated, according to the manufacturer. It contains new data and charts. Pictures show how the method is helping to overcome heat-treating bottlenecks in industry's battle of production. Leeds & Northrup Co., 4934 Stenton Ave., Philadelphia, Penn.

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